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HIGHLY SELECTIVE VAGOTOMY WITH DUODENOPLASTY: SURGICAL ALTERNATIVE FOR OBSTRUCTING DUODENAL ULCER.

By

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This paper reports experience in treating 24 patients with stenosing duodenal ulcer using HSV in addition to duodenoplasty.

PATIENTS AND METHODS:

Over a period of 5 years HSV were performed for patients with duodenal ulcer disease; 24 patients had a gastric outlet obstruction as a complication of their ulcers. They comprised 18 men and 6 women with a mean age of 38 years and a range of 25-68 years. The criteria used for diagnosis of duodenal ulcer stenosis were those published by Balint and Spence (1959). Such criteria were classified into major and minor items. The patients were included in the study only if manifesting at least two major or one major and two minor items (Table 1).

All patients were subjected to upper gastrointestinal endoscopy prior to surgery and six months after operation. All endoscopies were done using Olympus GIF type Qw. Also barium upper gastrointestinal study was done before and six months after surgery in 15 patients.

HSV was done in all patients as described by Khairat et al (1983). Following completion of vagotomy, duodenoplasty was performed using the same technique originally introduced by Norman Tannar (1973) and published later by Kennedy (1976). The duodenum was exposed (Fig. 1) and an estimate of the adequacy of the outlet was made by palpation between the index finger and thumb. In all patients digital assessments confirmed an inadequate lumen. The 2nd part of the duodenum was mobilized by Kocker's method.

Table 1 criteria for diagnosis of duodenal ulcer stenosis (after Balint and Spence 1959) and details of clinical features of patient in the present study:

| | Number of Patients N = 24 |
|--|------------------------------|
| Major Criteria | |
| 1. Classical history: persistent vomiting of large amounts at times when the stomach should be empty, usually containing recognisable residues of food eaten some hours previously | 16 |
| 2. Visible gastric peristalsis | 2 |
| 3. Mean aspirates, during hourly nasogastric aspiration, totalling more than 1000 ml/24h | 12 |
| 4. Retention of barium: Stomach emptying by less than two-third in 4 h (Fig. 5) | 15 |
| Minor Criteria | |
| 1. Suggestive history: persistent vomiting | 2 |
| 2. Succussion Splash | 16 |
| 3. Mean aspirates, during hourly nasogastric aspiration, totalling more than 750ml/24h | 2 |
| 4. Stenosis too narrow to admit gastroscope at endoscopy | 24 |
| 5. Stenosis confirmed at operation by digital assessment | 24 |

Longitudinal incision was made across the stricture, starting distally and continued proximally 1-3 cm on either side (Fig. 2). It must not cross the pyloric ring which was identified by palpation. In our series the length of the incision varied between 3 and 5 cm. The index finger was passed back into the antrum to confirm the integrity of the pyloric muscle ring and to exclude any pyloric mucosal diaphragm or other narrowing. The incision was then closed transversely (Fig. 3) using two layers of chromic catgut.

RESULTS:

There have been no operative mortalities or major complications. All the patients were followed up for a minimum of 9 months and a maximum of 3 years. No claims can yet be made for the long term results. All through the period of follow up we had had no patients with gastric retention. Endoscopy six months after operation showed that all the patients

with preoperative duodenal ulcers healed their ulcers. Post operative X-ray study with barium showed normal antral peristalsis and gastric emptying with no effect on the duodenal motility nor on the duodenal braking mechanism. (Fig. 6). The overall results were classified according to the modified Visick as excellent in 16 cases (66.6%), very good in 7 cases (29.2%), and satisfactory in one case (Table II).

DISCUSSION:

After HSV was introduced by Johnston (1970) it was quickly apparent that the incidence of dumping, diarrhoea and bilious vomiting was much lower than that seen after truncal vagotomy and drainage (Amdrup et al 1970, Johnston et al 1972, Humphrey et al 1972). Later on much evidence accumulated supporting the superiority of such a procedure in routine treatment of duodenal ulcer disease (Kennedy et al 1975, Dorricott et al 1978).

Table II : Modified Visick Grading Scale (Goliger 1972)

| | | |
|------------|----------------|---|
| Visick I | Excellent | The patient is completely symptom free. Mild symptoms controlled readily by dietary or antacid therapy. Mild or moderate symptoms not readily controlled by dietary or antacid therapy which cause some discomfort without interfering seriously with daily life. Moderate or severe symptoms which interfere considerably with the patient work or enjoyment of life. This category also includes all patients with proven recurrent ulceration. |
| Visick II | Very Good | |
| Visick III | Satisfactory | |
| Visick IV | Unsatisfactory | |

Unfortunately HSV has not been generally applicable in the presence of duodenal stenosis. Johnston (1972) performed HSV in 32 patients with duodenal ulcer disease, and reported that he excluded all patients with duodenal stenosis from his series. Wastell et al (1977) and Amdrup et al (1978) added pyloroplasty to HSV for treatment of such cases, however, the incidence of dumping increased significantly from 4 to 24 per cent.

Johnston (1973) was the first to describe, digital dilatation through a small gastrotomy added to HSV in dealing with stenosing duodenal ulcer patients (Fig. 4). However, he reported rupture of the duodenum in four out of 15 dilatations [Johnston et al 1973 AND Dunn et al 1981].

Kennedy et al (1979) mentioned that dilatation not only carried out a high risk of rupture duodenum but

also must surely be associated with some risk of restenosis.

Hooks et al (1986) treated 62 cases of stenosing duodenal ulcers by HSV in addition to dilatation in 44 cases and duodenoplasty in 18 cases. Follow up was done for a period ranging from 2 to 7 years. Hooks et al reported 8 cases of re-stenosis after dilatation (18%) and one case after duodenoplasty (5.5%). Such evidences make the concept of HSV with duodenoplasty more attractive.

It is now realised that pyloric stenosis is a misnomer as the narrowing is usually in the duodenum distal to the pylorus. In our study we found that the point of narrowing is 1.5 cm or more beyond the pyloric ring. Also when there was pseudodiverticulum formation the narrowing occurred beyond the pouches. As a result the obstruction is actually duodenal rather

than pyloric, therefore duodenoplasty is considered adequate to overcome such narrowing leaving pyloric ring intact.

Follow up studies by endoscopy showed no evidences of restenosis or recurrence of ulceration. Also post operative upper gastrointestinal barium study showed normal antral peristalsis and gastric emptying with no effect on the duodenal motility nor on its braking mechanism. Such results encouraged us to continue using HSV with duodenoplasty in patients with stenosing duodenal ulcer disease. these are safe procedures with little morbidity when performed carefully.

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Figure 1: The duodenum is exposed, the ulcer is seen anteriorly with post bulbar narrowing.

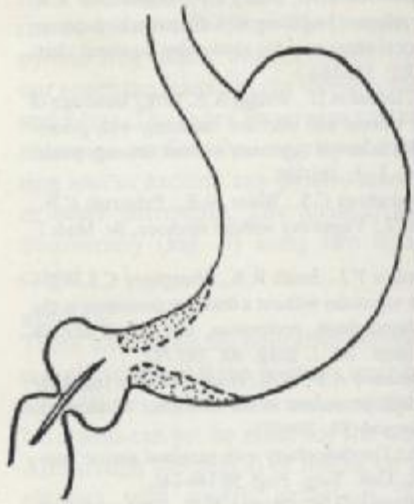


Figure 2. A longitudinal incision is made across the stricture started distally and continued proximally. The duodenum is seen opened.

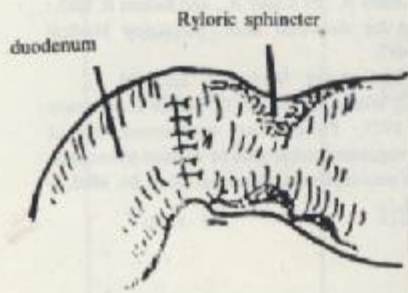


Figure 3: The duodenum is closed Transversely in two layers.

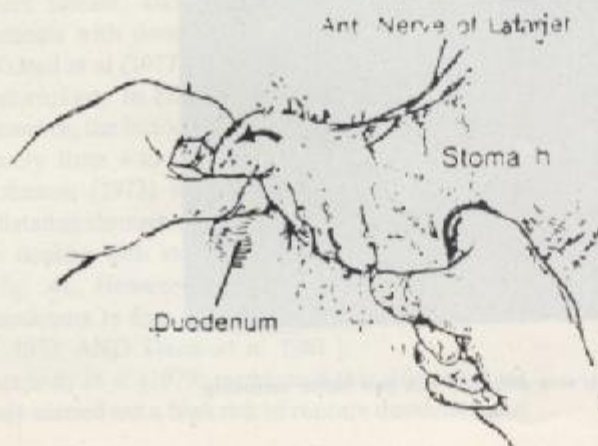


Figure 4. A dilatation through a small gastrotomy (after Johnston 1973).



Figure 5: Pre-operative X-Ray study with barium showing marked dilatation of the stomach with retention of barium in 6 hours.



Figure 6: Post-operative X-Ray study with barium for the same patient showing rapid empty of barium into the duodenum with no evidences of narrowing.

Highly Selective vagotomy with Duodenal

TRANSVERSE TAENIAMYOTOMY IN THE TREATMENT OF DIVERTICULOSIS OF THE SIGMOID COLON BY

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and
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Introduction and Historical Review:

Most of patients suffering from symptomatic uncomplicated diverticular disease of the colon can be controlled by conservative treatment. Patients in whom this treatment had failed were subjected to different types of surgical operations namely colectomy, longitudinal myotomy and more recently transverse taeniamyotomy (TTM).

Reilly, in 1964, invented longitudinal myotomy which entails division of the circular muscle coat by longitudinal incision done in the line of one of the antimesenteric taenia. This operation was criticised by Arfwidsson (1964) who thought that the muscle thickening and narrow lumen in diverticular disease is due to shortening of the taeniae and he considered that these taeniae should be cut transversely if myotomy was to be effective. Daniel, in 1969, also criticised longitudinal myotomy and stated its morbidity and mortality.

Penfold, in 1973, evaluated the results of colectomy for noninflammatory diverticular disease and found high percent (60%) recurrence of symptoms.

Johnson, in 1972, observed decrease in the intra-colonic pressure in rabbits after transverse taeniamyotomy. Hodgson (1974) practised the operation of TTM in man. He performed the operation on 18 patients suffering from complicated and uncomplicated diverticular disease with satisfactory results specially for uncomplicated cases.

Pescatori and Castiglioni (1978) studied the clinical results and sigmoid motility after TTM in 12 patients suffering from symptomatic uncomplicated diverticular disease of the sigmoid colon. They concluded that TTM is a better procedure with less morbidity and mortality comparable with colectomy and longitudinal myotomy.

In this work we tried to assess the clinical and radiological results of TTM in the treatment of symptomatic uncomplicated cases of sigmoid diver-

ticular disease not responding to conservative therapy.

MATERIAL AND METHODS:

11 patients affected by symptomatic uncomplicated diverticular disease of the sigmoid colon were selected for TTM after failure of antispasmodic (colospasmin tab.) and high residue diet as medical therapy for three months.

The complaint of these patients was mainly intermittent lower abdominal or left iliac fossa pain that waxes and wanes too fast to be compatible with the onset and resolution of diverticulitis. They were also complaining of flatulence, distension and constipation. There were no positive physical signs except mild left iliac fossa tenderness in two patients.

Diagnosis was settled by barium enema and sigmoidoscopy. Stool analysis was done to all patients to exclude associated lesions. Abdominal ultrasonography revealed gall stones in four patients to whom cholecystectomy was done together with transverse taeniamyotomy. The fitness for surgery was assessed by ECG, Chest X'ray, urine analysis, HB%, bleeding time, clotting time, BUN and fasting and postprandial blood sugar levels. Two patients were known diabetics and were controlled preoperatively.

No preoperative preparation was done except a glycerine suppository at the night of operation.

TECHNIQUE OF TTM:

The operation was done as described by Hodgson (1974). Left lower paramedian incision was made except in the four patients with associated gall stones in whom a long midline incision was used to facilitate cholecystectomy. The sigmoid colon was mobilized throughout the length affected by diverticular disease. Traction was then applied to the sigmoid colon and the two thickened antimesenteric taeniae coli were identified. Just above the peritoneal reflection the first transverse incision was

made anteriorly across the width of the fused taeniae to relieve the usual rectosigmoid spasm. Further incisions were made in a stepwise fashion across alternate thickened taeniae at 2cm intervals until normal bowel and taeniae were encountered above the diseased area. The circular muscle layer was not divided and so the submucosal plexus was not touched and there was no danger of mucosal perforation or bleeding from this plexus. The abdominal incision was closed.

Postoperatively intravenous fluids were given. Nothing was given by mouth till bowel sounds were audible when gradual oral feeding was started with fluids.

All patients were followed for a period of 12-18 months by repeated clinical examinations and barium enema done every three months.

RESULTS:

Six patients were females and five were males. Their age varied between 46-62 years with average of 57 years.

They all passed a smooth postoperative period and were discharged 8-10 days after the operation.

There was marked postoperative improvement in all patients. The pains and flatulence disappeared together with marked improvement of constipation during the period of follow up (12-18 months).

Postoperative barium enemas showed slight dilatation and widening of the sigmoid colon. The diverticulae remained without change in severity or extent:

DISCUSSION AND CONCLUSION:

High residue diet and antispasmodics normalizes rectosigmoid electrical activity and improves the symptoms of diverticular disease of the colon (Taylor and Duthie, 1976). We performed TTM in our Patients only after failure of medical treatment with high residue diet and antispasmodics.

A mortality rate of 1.5% after elective colectomy has been reported by Colcock (1958). Penfold (1973) found that 60% of the patients were symptomatic after colectomy for noninflammatory diverticular disease. This was probably due to the increased intraluminal pressure in the rectosigmoid after colectomy (Parks, 1970a).

Reilly, in 1964, invented longitudinal myotomy for treating diverticular disease. This operation is difficult to perform without morbidity since haemostasis from the submucosal plexus is almost impossible to obtain without perforation of the mucosa. Faecal soiling and local peritonitis have been common and faecal fistulas have occurred (Daniel, 1969). Also longitudinal myotomy have high postoperative mortality 9% (Reilly, 1970) and high rate of recurrence of symptoms 40% (McGinn, 1976). Daniel in 1969 attributed recurrence of

symptoms after longitudinal myotomy to healing of the longitudinal incision postoperatively as a result of approximation of the two severed edges by contraction of the circular muscle layer of the colon. Exactly the opposite occurs after TTM since contraction of the cut taeniae coli opens all the defects and maintain the postoperative status without reunion of the transversely divided taeniae coli.

In our patients there was no mortality or morbidity and there was dramatic improvement of the symptoms for 12-18 months follow-up.

This is consistent with the results obtained by Hodgson (1974) who performed TTM for 18 patients with satisfactory results. Specially in uncomplicated cases of diverticular disease. Also our satisfactory results in this work, go with the results of Pescatori and Castiglioni (1978) who studied the sigmoid motility and clinical results after TTM done for 8 patients. They recorded disappearance of symptoms in all patients. They also noticed widening of the sigmoid colon in postoperative barium enemas as that noticed in our work, but we were not able to record decrease in the number and extent of diverticulae which they noticed in their work.

From the results of our work and the satisfactory results of TTM recorded by Hodgson (1974) and Pescatori and Castiglioni (1978) it can be concluded that transverse taeniamyotomy is a simple, safe and effective operation for the treatment of symptomatic uncomplicated diverticular disease of the colon which does not respond to medical and dietetic therapy.

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PARATHYROIDECTOMY IN MULTIPLE OR RECURRENT RENAL CALCULI WITH HYPER AND NORMOCALCAEMIA A REVIEW OF 60 CASES

BY

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ABSTRACT

The treatment of renal calculi must not be only by removal but also by prevention of its formation. Hyperparathyroidism, Manifested.. with hypercalcaemia or normocalcaemia is an important cause of renal stone formation. Also, renal calculi may be the only manifestation of normo or hypercalcaemic HPT. Parathyroidectomy in these case is the only treatment of stone formation. This study includes 60 patients with multiple and/or recurrent renal calculi without apparent local cause, and 15 patients with normocalcaemia. Neck exploration and removal of abnormally sized parathyroid glands was done for all cases. Glands removed was examined pathologically and revealed hyperplasia or adenoma in 58 patients. There were no mortality or morbidity and post-operative period was smooth.

The diagnosis of primary hyperparathyroidism has always been based upon the demonstration of high serum calcium, low serum phosphorus, and high urinary excretion of calcium.

The disease can be identified in the asymptomatic state, or present in any of symptomatic forms. According to clinical picture symptomatic patients may be classified into: a) those with renal stones, b) those with bone disease, c) those with G.I. symptoms, and d) those with miscellaneous symptoms.

Currently, most patients are asymptomatic, and, are identified on the basis of elevated serum Ca level at the time of a screening test.

Controversies exist concerning the role of different diagnostic procedures, the indications for operation, and the extent of the surgical procedure.

Surgery is a highly effective therapy when the endocrinologist, surgeon, and pathologist are in close cooperation.

MATERIAL AND METHODS:

This series comprises 60 patients treated at Ain Shams University Hospital in the period from 1983 to 1986. They were 12 females and 48 males. Their age range from 7 years to 56 years. (Table 1).

| Age | No | males | females |
|---------|----|-------|---------|
| *7 - 20 | 18 | 17 | 1 |
| 21 - 30 | 6 | 5 | 1 |
| 31 - 40 | 28 | 19 | 9 |
| 41 - 56 | 8 | 7 | 1 |
| | 60 | 48 | 12 |

* One male was 7 years, others more than 10 years.

Patients in this study presented with multiple

urinary stones, recurrent urinary stones, or urinary stones with bony affection. (Table II).

[Table II]

| Symptoms | No. of cases | | |
|-------------------------|--------------|--------|-------|
| | Male | Female | Total |
| Multiple stones | 12 | 3 | 15 |
| Recurrent Stones | 32 | 8 | 40 |
| Stones + Bony affection | 4 | 1 | 5 |
| | 48 | 12 | 60 |

All patients submitted to estimations of serum calcium and phosphorus, Ca in urine, serum alkaline phosphatase serum creatinine, B.U.N., T.S.P albumin, U.T.P. I.V.P., bone survey, and parathyroid scan was done for only three patients.

Neck exploration for identification & removal of pathological parathyroid glands followed by histopathological examination of the specimens were performed for all patients. We depended on the size of the gland. In cases suspected to be hyperplasia we removed three enlarged glands, In cases with one

large gland, it was the only removed one with suspicion of adenoma.

RESULTS:

History of B was positive in 47 cases, four of them were normocalcemic, and 43 were hypercalcemic.

Depending on serum calcium; patients were divided into groups (A) Fifteen patients (12 males and 3 females) were normocalcemic. (B) Forty five patients (36 males & 9 females) were hypercalcemic. And according to their clinical varieties they were as in (Table III).

[Table III]

| Clinical varieties | Normocalcemic | Hypercalcemic |
|-------------------------------|---------------|---------------|
| Multiple renal stones | 8 | 25 |
| Recurrent renal stones | 6 | 16 |
| Renal stones + Bony affection | 1 | 4 |
| | 15 | 45 |

Regarding the laboratory investigations there were no statistical significant difference between the normo and hypercalcemic groups except in total

serum proteins. The mean level of total serum protein in the normocalcemic Patients (6.78 gm%) is lower than the mean level in hypercalcemic patients (7.48 gm%) (Table IV).

[Table IV]

| LAB. Ex. | Hypercalcemia (1) 10. 4 mg% | | Normocalcemia 8.8-10. 4mg% | | P, Value |
|----------------------------|--------------------------------|-------|-------------------------------|-------|----------|
| | X | SD± | X | SD± | |
| * Bl. urea | 46.82 | 26.06 | 40. | 21.57 | P> 0.05 |
| * S. creatinine | 1.38 | 0.89 | 0.86 | 0.24 | P< 0.05 |
| * Urinary Ca ⁺⁺ | 129.95 | 46.43 | 146.5 | 76.29 | P> 0.05 |
| * S. phosphorus | 3.51 | 0.77 | 3.9 | 0.55 | P> 0.05 |
| * Alk. phosphatase | 11.41 | 8.06 | 12.38 | 11.06 | P> 0.05 |
| * Total protein | 7.48 | 0.71 | 6.78 | 0.80 | P< 0.01 |
| * S. Albumin | 4.96 | 1.14 | 4.44 | 0.78 | P> 0.05 |
| * S. globulin | 2.52 | 0.54 | 2.34 | 0.46 | P> 0.05 |

() Bondy & Rosenberg 1974. (Ref. 1)

(X) Mean

(SD ±) Standard deviation.

* Significant

Radiological examination of the urinary tract showed that bilateral renal stones were the commonest presentation (about 76%), unilateral solitary stone, which was usually Stag horn, in nearly (more than 14%), and only 10% of patients had unilateral multiple stones.

Nephrocalcinosis in addition to stones were seen in five patients. The I.V.P. showed variation of the renal function from normal, to delayed or lost renal function.

Hydroureter and hydronephrosis were seen in varying degrees but in all cases, even with history of B, there were no evident stricture at the uretero-vesical junction and there was no stricture at the pelvi-ureteric junction.

In pediatric patients, there was no evidence of congenital anomalies in the urinary tract. Bone survey showed varying affection in 5 cases (cysts, osteoporosis & fractures). (Fig. IV, V, VI). Parathyroid scan was done for three patients and showed increased uptake and the adenoma, its site, size, and shape were visualized and determined accurately, (Fig III VI), there were two normocalcemic patients and one hypercalcemic patient with fracture and bone cysts.

Neck exploration for all patients of both groups and removal of pathological glands (known by its size or according to the scan). The results of the histopathology in (Table V).

[Table V]

| Histopathological examination | No. of cases |
|-------------------------------|--------------|
| Hyperplasia clear cell type | 34 |
| Hyperplasia chief cell type | 6 |
| Adenoma + hyperplasia | 6 |
| Adenoma clear cell type | 8 |
| Adenoma chief cell type | 4 |
| * No parathyroid tissue | 2 |
| Total | 60 |

* They were normocalcemic.

Parathyroidectomy in multiple or Recurrent

From the table it is evident that most of patients were clear cell hyperplasia and combination of adenoma and hyperplasia nearly similar in occurrence as chief cell hyperplasia alone or adenoma. Only two of the fifteen normocalcemic patients (about 13 1/3% of the normocalcemic group) were negative as the specimens showed thymus or L.N.

All patients revealed adenomas were hypercalcemic except one normocalcemic with stones and bony affection.

The postoperative was smooth. No cord paralysis in the series detected. Tingling and numbness occurred in 6 patients (all with bony affection and other one with renal affection only) and treated with intravenous Ca^{++} as a drip every 6 h. for 2 days; followed by oral calciferol for another 3 days which after were self compensated.

No mortality in this series.

DISCUSSION:

Renal complications and bony affection are important clinical manifestations of hyperparathyroidism. There is no sure preventive method for stone formation except if the etiological cause was hyperparathyroidism. In those cases parathyroidectomy will be a preventive procedure for further stone formation or renal damage. Diagnosis of hyperparathyroidism depending mainly on hypercalcemia led to missing many cases of hyperparathyroidism which are normocalcemic with recurrent or multiple renal calculi Mindy, 1980.

This study includes 60 patients with hyperparathyroidism (hyper or normocalcemic) with renal calculi and bony affection. Their ages were 7 to 56 years. The highest age incidence was from 30 to 40 years then from 7 to 20 years. In all age groups males were more affected than females. In all studies of McGarity et al., Johnson et al., and Hines et al., the age ranged from 20-88 years with highest incidence around forties and fifties. Only William et al., found that 6% of his series were younger than 20 years and females represented 77% of them. Also Hines et al., found female to male ratio 2:1. But Johnson et al., found males more affected than females like our series.

In our series, history of bilharziasis did not exclude the presence of Iry hyperparathyroidism.

In spite of the importance of hypercalcemia as a sign of hyperparathyroidism, we found a normal level of total serum calcium in fifteen patients proved to be hyperparathyroidism at neck exploration. High serum Ca was present in forty five. Other laboratory investigations did not show statistical difference between the normo and hypercalcemia groups except the mean level of total serum protein which was lower in normo than in hyper-

calcemia group. This, to extent, can explain the normocalcemia.

The term normocalcemic HPT was coined by Wills, Park, Hommand and Bather in 1969. The first case of normocalcemic hyperparathyroidism was described by Mather, 1953.

Wills et al., 1969 recorded 3 patients with normocalcemic HPT, they discovered 2 adenomas in two patients and hyperplasia in the third. William et al., 1971; reported 10 patients with HPT evident by histopathological examination of the biopsed glands and they were normocalcemic. Grimelius, and Warner, reported normocalcemic cases in a series of 179 HPT patients. Also, normocalcemic HPT has been reported to make up 13-18% in a series of 60 patients with HPT. Ljunghall, explored the parathyroid gland for 52 cases of recurrent calculi and revealed adenoma or hyperplasia in 35 patients (more than 50%). Also, Mcleod reported 19 patients with normocalcemic HPT with symptoms of renal calculi, abdominal pain, bone pain and one patient with pancreatitis.

Three explanations for normocalcemic HPT were proposed ..1) errors in standards because 11 mg/dl was erroneously used as the upper normal limit of serum Ca. 2) fluctuant level of serum Ca. 3) coexistence of certain metabolic factors such as hypoproteinemia, vit. D deficiency, renal failure. (Johnson et al, 1975).

In our series hypoproteinemia was observed in the normocalcemic group.

There have been reports that the level of ionic calcium may be high in patient with HPT, even when the value for total serum Ca is normal, but this has not been the experience of others.

In this series all patients with renal calculi (multiple or recurrent) with or without bony manifestations of HPT, there was no apparent cause For renal calculi such as strictures, congenital malformation or salt crystals in urine. In the hypercalcemic group it was evident that HPT is the etiology. In the normocalcemic group, HPT was proved after exploration of the gland and histopathological examination which showed hyperplasia in 12 cases and adenoma in one case.

There is no mortality or morbidity. So neck exploration for parathyroid gland in cases with multiple or recurrent renal stones with or without bony affection is a safe procedure.

Exploration for abnormal parathyroid gland must be done even if the serum calcium level is normal in renal calculi with no apparent aetiological cause.

SUMMARY:

Hyperparathyroidism is a serious metabolic disorder. We have three cardinal laboratory findings to

diagnose 1ry HPT. Thy are hypercalcemia, hypophosphatemia and hypercalcuria. High level of alkaline phosphatase is a fixed finding in patients with renal and bone manifestations. But, there are cases with normocalcemic HPT. Elevation of parathormone level in blood is diagnostic for 1ry HPT. Because of its wide normal range and technical difficulties, it is not widely used.

It is safe to explore parathyroid glands in patients presenting with recurrent or multiple renal stones with no obvious local or general cause for their formation irrespective of serum calcium level.

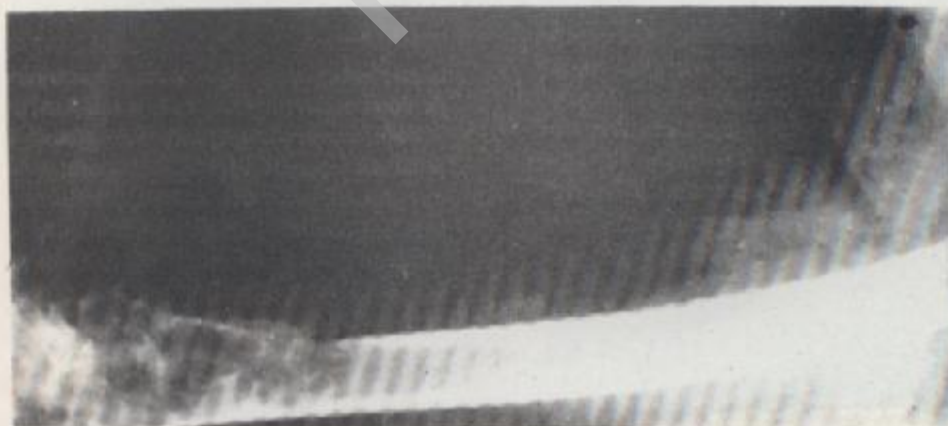
Exploration is better before deterioration of the renal function. It is an easy operation with no mortality or morbidity.

A high percentage of the normocalcemic cases especially with low albumin level have HPT and will not be diagnosed accurately without neck exploration for the parathyroid glands.

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Parathyroidectomy in multiple or Recurrent

Fig. (I): Bone tumour.

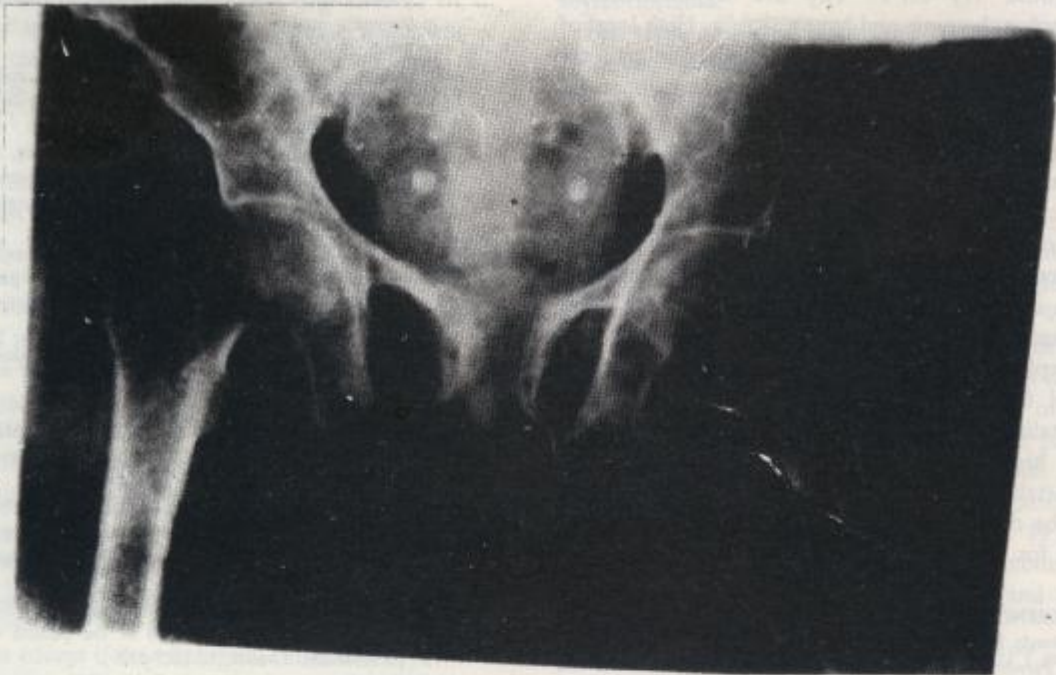


Fig. (II): Multiple cysts.

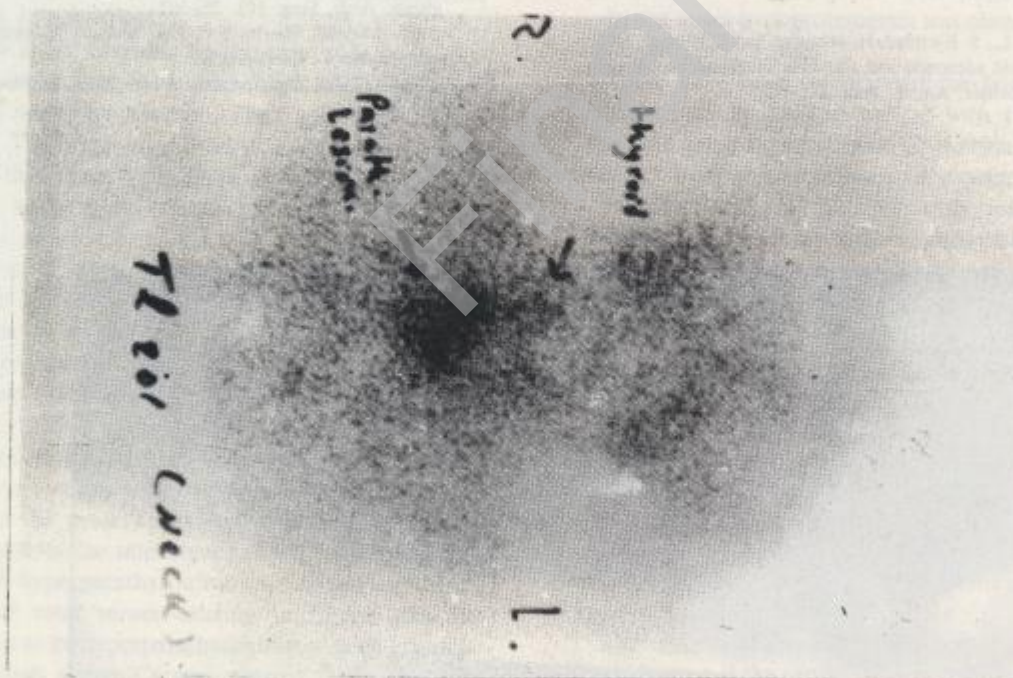


Fig. (III): Tc 99 scan.

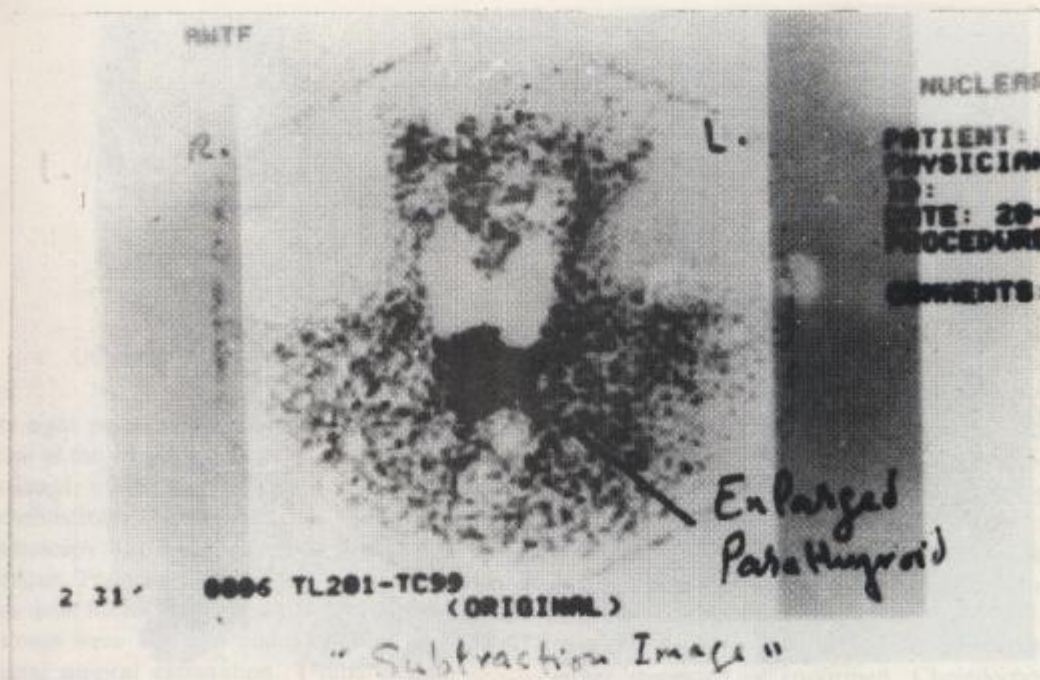
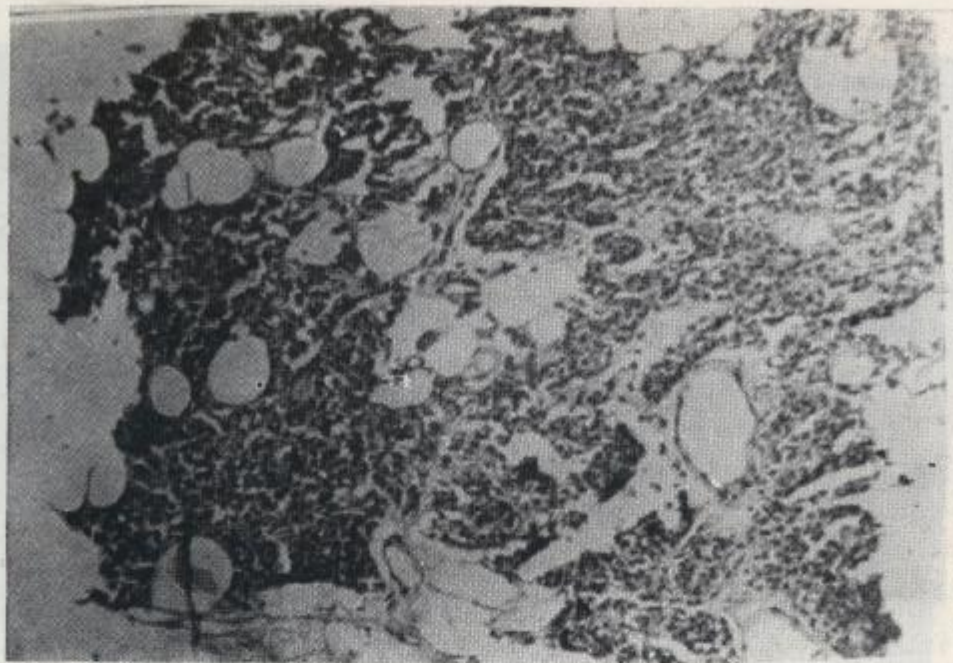


Fig. (V): subtraction image.



Fig. (VI): Osteoporosis of the skull.



Parathyroid Hyperplasia



Parathyroid Adenoma

Fig. (VII): Bone cysts and pathological fracture.

THE USE OF CHOLEDOCHOSCOPY IN COMMON BILE DUCT EXPLORATION

BY

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ABSTRACT

Twenty eight patients with gall stones requiring exploration of the common bile duct were studied. Conventional instrumental exploration and choledocholithotomy were done for each case. Choledochoscopy was then performed to evaluate the technique. Post-operative T-tube cholangiography was done for all cases. In 3 patients (10.7%) missed stones were detected endoscopically after conventional surgical exploration. T-tube cholangiography confirmed the finding of operative biliary endoscopy in all cases. Choledochoscopy is an accurate, and safe operative procedure, which can eliminate the problem of undetected residual calculi.

INTRODUCTION:

Incomplete choledocholithotomy is a potential hazard for the patient undergoing exploration of the common bile duct. The subsequent demonstration of undetected residual calculi by postoperative cholangiography may cause distress both to the patient and to the surgeon (Finnis and Rowntree, 1977). The earliest report of choledochoscopy was in 1923 by Bakes who used a rigid instrument; improved types were subsequently described. A major advance occurred with the introduction of the first flexible fiberoptic choledochoscope (Shore and Shore, 1970; Longland, 1973). Despite recent improvements in biliary instrumentation and radiology, the incidence of residual common bile duct stones have been reported between 4 and 14% (Harvard, 1960; Glen, 1974; Bergdahl and Holmlund, 1976) and even in one report up to 30% (Ottinger et al., 1974). To decrease the rate, biliary endoscopy has been proposed. It was decided to evaluate the technique and results of choledochoscopy in a series of patients who were undergoing exploration of the common bile duct for gall stones.

MATERIAL AND METHODS:

Between March 1984 and July 1987, 28 patients underwent surgery for choledocholithiasis. There were 4 reoperations (14.3%) for retained stones. Our series consisted of 11 men and 17 women. Ages

ranged from 22 to 67 years with an average of 42 years. The criteria for choledochotomy included standard clinical and biologic assessment. Each patient had a sonogram and roentgenogram. Radiologic study included an oral cholecystogram or an intravenous cholangiogram in non-icteric patients. In icteric patients, we obtained retrograde endoscopic cholangiogram. The study has been done mainly for patients with choledocholithiasis, either suspected or confirmed. Choledochoscopy was carried out to exclude residual calculi at the end of the conventional surgical exploration.

The common bile duct was approached through a Kocher incision. The duct was explored through a longitudinal supra-duodenal incision between stay sutures, and the duodenum with the head of pancreas, were then fully mobilized by Kocher manoeuvre before exploration began. Conventional surgical exploration and choledocholithotomy were first done. After finishing, the choledochoscope was introduced distally through the choledochotomy. The choledochoscope used was the Olympus CHF-B2 one with a working length of 610 mm and an outside diameter of 5.7 mm. The control unit of the choledochoscope was held in the right hand while the fingers and thumb of the left hand hold the mobilized duodenum and pancreas, so that the tip of the instrument could easily be manipulated to allow an adequate view of the lumen and ampulla. A continuous flow of sterile normal saline from a standard drip set through the instrument's irrigation channel allowed distension of the duct and clear vision through the fluid. The instrument was advanced under direct vision and observation was continued during withdrawal, when the best views might be obtained. In some cases the tip was passed with ease into the duodenum. Any calculus seen was washed out by the flow of irrigating saline or removed with conventional instruments. The choledochoscope was then reintroduced until complete clearance of calculi was confirmed. The proximal biliary tree, including the major intrahepatic bile ducts, were examined to exclude calculi. It is

usually easier to obtain an adequate view proximally, as the liver parenchyma tends to hold the bile ducts open. When endoscopy was completed, the choledochotomy was closed with T-tube drainage. The endoscopic findings were checked by post-operative T-tube cholangiography on the 10th post-

operative day before the tube was removed.

We compared our results of operative choledochoscopy with instrumental exploration during surgery together with the short-term follow up that was assessed clinically and on the 10th post-operative day by a cholangiogram.

RESULTS:

Table I summarizes the indications for which common bile duct exploration was done.

| Indication | No. of patients |
|--|-----------------|
| — Obstructive jaundice | 17 |
| — History of jaundice with gall bladder stones | 4 |
| — Gall stones with dilated CBD | 5 |
| — Palpable stones in CBD | 2 |
| Total | 28 |

28 patients underwent choledochoscopy during surgery. In 2 patients no calculi were removed at either surgical exploration or choledochoscopy. In 23 cases, after conventional choledocholithotomy, endoscopy revealed no further calculi. In 3 cases

endoscopy revealed residual calculi after choledolithotomy and all calculi were removed before final endoscopy confirmed complete biliary clearance. No intrahepatic or other inaccessible calculi were seen or left behind.

Table II show the operative findings in 28 cases of exploration of CBD.

| Operative finding | No. of patients | % |
|---|-----------------|------|
| No. calculi | | |
| * on exploration on endoscopy | 2 | 7.1 |
| Endoscopically free after choledocholithotomy | 23 | 82.2 |
| Further calculi on endoscopy | | |
| * choledocholithotomy clear | 3 | 10.7 |

Post operatively, all patients (28) underwent T-tube cholangiography. All of the 28 cholangiograms confirmed the findings of operative endoscopy. There were no stones detected by postoperative cholangiography that were missed by choledochoscopy.

There was no detectable trauma to the bile ducts caused by choledochoscopy and there were no other complications that could be attributed to the procedure.

DISCUSSION:

Surgical treatment of choledocholithiasis has two objectives: low morbidity and mortality for a non-malignant disease, and a low retained stone rate (Escate et al., 1984). It is clear from our experience and from what is reported in the literature that the routine use of the choledochoscope to confirm accurately the completion of choledocholithotomy can certainly reduce the incidence of undetected residual calculi as measured by the postoperative

T-tube cholangiography. In our study, residual calculi after conventional instrumental choledocholithotomy occurred in 3 patients (10.7%) and all calculi were removed before final endoscopy confirmed complete biliary clearance. The reported incidence of stones overlooked by instrumental exploration ranges from 5% (Schein, 1975) to 30% (Ottinger et al., 1974). None of our patients had intrahepatic inaccessible calculi. Many studies however, reported missed inaccessible stones that were seen endoscopically (Ottinger et al., 1974, 3.3%; Kappas et al., 1979, 2.3%; Escate et al., 1984, 2%). They all agreed that choledochoscopy can detect easily these calculi and this allows the correct decision on management to be taken at operation, perhaps requiring choledochoduodenostomy or transduodenal sphincteroplasty.

In none of our patients did the postoperative cholangiography and operative endoscopy fail to agree. This is similar to the results obtained by most of the workers in this field (Schein, 1969; Leslie, 1974; Finnis and Rowntree, 1977 and Escate et al., 1984). Some reports however, showed low incidence of endoscopically missed stones that were detected by postoperative cholangiography (Shore and Shore, 1970, 3.2%; Longland, 1975, 5.2%). So choledochoscopy has replaced on table completion T-tube cholangiography which is time-consuming and less accurate. It carries a 7% residual stone rate according to Way et al., (1972).

Choledochoscopy can be considered nowadays an indispensable tool in common bile duct surgery. The common bile duct is perfectly visualized and nonspecific training is required. The length of surgery is not increased and no complications related to its use has been reported (Escat et al., 1984). Some surgeons may find difficulties in obtaining view of the distal common duct. However, with adequate mobilization of the duodenum and pancreas, the common bile duct can be manipulated externally to achieve complete visualization (Finnis and Rowntree, 1977). Compared with other forms of endoscopy

e.g. duodenoscopy and colonoscopy, the technique of choledochoscopy is easier, not only because of the extra aspect of direct tip control but also because of the comparatively simple endoscopic anatomy of the bile ducts.

Summary conclusions:

Operative fiberoptic choledochoscopy carried out during conventional surgical exploration of the common bile duct is a simple, accurate and safe procedure which can eliminate the problem of undetected residual calculi. It is easy to perform and its use is cost-effective. Therefore, we recommend that routine intraoperative biliary endoscopy be performed in all patients undergoing common bile duct exploration.

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PARATHYROID GLAND FUNCTION FOLLOWING SUBTOTAL THYROIDECTOMY

BY

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ABSTRACT

A series of 39 goitres submitted to subtotal thyroidectomy were studied postoperatively for the effect of surgery on parathyroid function. The serum levels of calcium, phosphorus, alkaline phosphatase and parathormone were estimated before and after surgery and correlated with the size of thyroid remnant, ligation of the inferior thyroid artery, exposure of the recurrent laryngeal nerve and the histopathology of the removed specimen. A relatively high incidence of postoperative hypoparathyroidism was observed, so that special precautions are necessary.

Besides technical precautions during surgery the postoperative serum calcium must be estimated 2 weeks after thyroid surgery to detect postoperative hypocalcaemia and start proper treatment early.

INTRODUCTION

In all forms of goitre whether simple, toxic or neoplastic, the pathology is irreversible and surgery is always indicated. In all benign goitres, subtotal thyroidectomy is generally employed since conservative procedures, such as lobectomy and hemithyroidectomy are attended with high recurrence rates (Rifaat et al., 1984).

Postoperative hypoparathyroidism occurs when all parathyroid glands are removed, irreversibly damaged during dissection or when their blood supply is interfered with (Block et al., 1966).

POSTOPERATIVE HYPOPARATHYROIDISM

There are two forms of post-thyroidectomy parathyroid insufficiency:

- (a) Overt type: with evident clinical and laboratory findings.
- (b) Occult type: when the patient is asymptomatic with relatively normal serum calcium but is lacking parathyroid reserve.

The overt type may be transient or permanent (with a ratio of 2.5 : 1). In the transient form, the

injured parathyroid tissue recovers and serum calcium level returns to normal and the symptoms disappear within 6 months. In the permanent form, no such recovery occurs but the nerve endings almost invariably get adapted to the low calcium level, so that the symptoms disappear even though the late sequelae, such as cataract and trophic changes in hair, nails and skin, which persist even if the hypocalcaemia is corrected.

Central nervous system affection may also develop such as psychosis, convulsive fits, fatigue, anxiety, depression and delusions (Wade, 1972; Reyes et al., 1979 and Waldestein, 1980).

In the classical form of post-thyroidectomy tetany, numbness, tingling and parasthesias (especially in the perioral tissues) are the first symptoms to appear after the operation. Carpopedal spasms show in about 70% of the cases, while laryngeal stridor with asphyxia are extremely rare. Chvostek's and Trousseau's signs are helpful when frank symptoms are not evident or before their appearance. General ill-health with vague symptoms can be due to subnormal blood calcium level.

MATERIAL AND METHODS

The present series included 35 females and 4 males whose age ranged between 21 and 60 years. Their goitres were thyrotoxic in 15 and simple nodular in 24 (Table 1).

The following studies were performed pre and postoperatively:

- 1- Serum calcium estimation: A colourimetric method (0- cresol-phthalein complexone, without deproteinization) was used (Sarkar and Chauhan, 1967). The normal serum value is 8.1-10.4 mg%.
- 2- Serum phosphorus estimation: A colourimetric method was used without deproteinization of serum phosphorus, using a single reagent which forms a phosphomolybdate complex in the presence of a reducing agent (ferrous sul-

phate). The normal serum value is 2.5-5 mg% (Taussky and Shorr, 1953).

- 3- Serum alkaline phosphatase estimation: The optimized kinetic test using commercial kits supplied by Behring institute was used. The normal serum value is 85-213 U/L for males and 67-207 U/L for females (Thomas, 1978).
- 4- Radioimmunoassay of serum parathormone: Kits for human mid molecule parathyroid hormone (PTHMM) were used. The normal serum value is 29-85 pico-moles/L (Mallette et al., 1982).

During operation, the trunk of the inferior thyroid artery was not ligated on one or both sides in some patients. Likewise, the recurrent laryngeal nerve was not exposed in all instances. The size of the thyroid remnant was noted, visually and by palpation, and expressed in c.c. by multiplying length x width x depth.

After operation, the weight and volume of removed goitre was measured and the gross and microscopic examination of the specimen was carried out with special attention to the presence of parathyroid tissue.

RESULTS

Table 2 shows the preoperative findings:

The serum calcium was high in 14 out of 34 patients (41%) being more frequent in thyrotoxic (67%) than in simple nodular goitre (27%). The serum phosphorus level was normal in all patients. The serum alkaline phosphatase level was high in 7 out of 34 patients (21%), being so only in the thyrotoxic (58%) but not in the simple nodular goitre. The serum parathormone level was normal in all patients except 2 with simple nodular goitre, being high in one and low in the other patient. However, these 2 patients showed normal serum calcium level.

Table 1 shows the operative data:

The size of thyroid remnant varied between 4 and 14 c.c. The main trunk of inferior thyroid artery was ligated bilaterally in 27 patients, while in the other 12 patients it was not ligated on one or both sides. The recurrent laryngeal nerve was exposed bilaterally in 23, unilaterally in 8 and not at all in 8 patients.

Postoperative findings:

The removed goitre weighed 19.8-147.2 gm and had a volume of 21-149 c.c. (Table 1). Histopathologically, parathyroid tissue was found accidentally included in the removed goitre in only one patient.

Table 2 shows the postoperative laboratory findings: The postoperative serum calcium level decreased relatively in most patients, but only in 10 patients it dropped below normal giving an incidence of postoperative hypocalcaemia of about

28%, being about 23% in toxic and about 32% in simple nodular goitre. However, the postoperative serum phosphorus level was normal in all the patients.

The postoperative serum alkaline phosphatase level was high in 9 patients, 8 of whom were thyrotoxic. These thyrotoxic patients had also the same rise of serum alkaline phosphatase level before surgery. The 9th patient who was non-toxic had normal preoperative serum alkaline phosphatase level.

The postoperative serum parathormone level was reduced in all patients except two who had higher level. The relatively reduced postoperative serum parathormone level was below the normal range in 7 patients only and 4 of them showed postoperative hypocalcaemia, while 3 patients showed normal postoperative serum calcium level. The other 6 patients with postoperative hypocalcaemia had normal postoperative serum parathormone level.

Out of 35 patients, 11 (31%) developed postoperative tetany (Table 2), being overt in 7 (20%) and latent in 4 (11%). Such patients included 9 with postoperative hypocalcaemia and 2 patients with apparently normal calcium level. On the other hand, one patient with postoperative hypocalcaemia (8mg%) did not show tetany. Tetany was detected on the 2nd or 3rd postoperative day in 9, while in two patients, it appeared on the first day after operation.

The size of thyroid remnant in the patients with postoperative hypocalcaemia varied between 6 and 10 c.c. However, the patient who had the smallest remnant of 4 c.c did not develop postoperative hypocalcaemia and out of the 6 patients who had a remnant of 6 c.c., 2 patients only developed postoperative hypocalcaemia.

Among the 10 patients with postoperative hypocalcaemia, the trunk of the inferior thyroid artery was ligated bilaterally in 9, but unilaterally in one patient.

Out of 8 patients in whom the trunk of the inferior thyroid artery was not ligated on either side, only one patient developed postoperative hypocalcaemia (12.5%), but out of 27 patients with bilateral ligation of this trunk, 9 patients developed postoperative hypocalcaemia (33.3%).

In the 10 patients with postoperative hypocalcaemia, the recurrent laryngeal nerve was exposed on both sides in 7, on one side in 2 and not at all in one patient.

Postoperative hypocalcaemia developed in 3 out of 14 patients with unexposed recurrent laryngeal nerve on either side (21.4%), but in 7 out of 21 patients with bilateral nerve exposure (33.3%).

DISCUSSION

Postoperative hypocalcaemia was found in 28% of the studied patients, being 23% in the thyrotoxic and 32% in the non-toxic patients; However, Waldstein (1980) reported higher incidence of post-operative hypocalcaemia in thyrotoxic than in simple nodular goitre.

In this study, most thyrotoxic patients with high preoperative serum alkaline phosphatase level showed a decline after surgery, suggesting that corrected thyrotoxic osteodystrophy plays some role

in postoperative hypocalcaemia (Beaugie, 1975).

The serum parathormone level in most patients became relatively lower after surgery than before it. Since parathyroid tissue was detected in the removed goitre in one patient only (2.5%), injured blood must account for the majority of postoperative low serum parathormone level. Similarly, Wade (1972) reported an incidence of 0.4% of accidental parathyroid gland removal, but suggested that damaged blood supply was more important than gland removal.

Table 1 : Clinical and Operative Data in the Present Series

| S.N | Age (yrs) | Sex | Goiter Type | Dur. | Exposure of Rec. Lary. N | | Ligation of Inf. Thy. aa | | Remnant Size (C.C) | Removed Thyroid | |
|-----|-----------|-----|-------------|------|--------------------------|---|--------------------------|---|--------------------|-----------------|------|
| | | | | | R | L | R | L | | Wt. | Vol. |
| 1 | 30 | F | Toxic | 6y | + | + | + | + | 8 | 126.2 | 100 |
| 2 | 25 | F | Nod. | 2y | - | - | - | + | 14 | 65.8 | 64 |
| 3 | 30 | F | Nod. | 2m | - | - | + | + | 6 | 59.7 | 60 |
| 4 | 25 | F | Toxic | 18m | - | + | + | + | 8 | 135 | 130 |
| 5 | 25 | F | Nod. | 2y | - | - | + | - | 12 | 59.7 | 60 |
| 6 | 52 | F | Nod. | 20y | - | - | - | - | 12 | 19.8 | 21 |
| 7 | 22 | F | Nod. | 10y | + | + | + | + | 8 | 120 | 90 |
| 8 | 26 | F | Nod. | 2m | + | + | + | + | 8 | 79.5 | 80 |
| 9 | 50 | F | Nod. | 10y | + | + | + | + | 8 | 78.3 | 81 |
| 10 | 49 | M | Nod. | 2y | + | + | + | + | 8 | 147.2 | 149 |
| 11 | 21 | F | Nod. | 3y | + | + | + | + | 8 | - | - |
| 12 | 40 | F | Toxic | 18m | + | + | + | + | 8 | 71.1 | 71 |
| 13 | 21 | F | Nod. | 3y | - | - | + | - | 10 | - | - |
| 14 | 45 | F | Nod. | 3y | + | + | + | + | 4 | 66.2 | 68 |
| 15 | 30 | F | Toxic | 7m | - | - | + | + | 6 | 79.4 | 74 |
| 16 | 34 | F | Nod. | 5y | + | + | + | + | 8 | - | - |
| 17 | 38 | F | Toxic | 6m | - | - | + | + | 6 | 121.7 | 98 |
| 18 | 37 | F | Nod. | 2m | + | + | + | + | 8 | - | - |
| 19 | 25 | F | Nod. | 2y | - | - | + | + | 8 | - | - |
| 20 | 28 | F | Nod. | 30m | - | - | + | + | 8 | - | - |
| 21 | 36 | F | Nod. | 7y | - | - | + | + | 8 | 106.8 | 109 |
| 22 | 37 | F | Nod. | 3y | + | - | + | + | 10 | - | - |
| 23 | 55 | M | Nod. | 6y | - | + | - | + | 10 | 123.1 | 126 |
| 24 | 42 | F | Toxic | 10y | + | + | + | + | 6 | - | - |
| 25 | 26 | F | Toxic | 8m | - | - | + | + | 8 | 112.5 | 96 |
| 26 | 45 | F | Nod. | 7m | + | + | + | + | 8 | 298 | 32 |
| 27 | 45 | F | Nod. | 8y | + | + | + | + | 6 | - | - |
| 28 | 25 | F | Nod. | 5y | - | + | - | + | 8 | 104.7 | 109 |
| 29 | 35 | F | Nod. | 9m | + | - | + | - | 8 | 64.7 | 65 |
| 30 | 25 | F | Nod. | 1y | + | + | + | + | 6 | 69.8 | 67 |
| 31 | 26 | F | Toxic | 1y | + | + | + | + | 8 | 79.3 | 72 |
| 32 | 55 | F | Toxic | 40y | - | + | - | + | 8 | 77.9 | 76 |
| 33 | 24 | F | Toxic | 7m | + | + | + | + | 8 | 74.4 | 66 |
| 34 | 27 | F | Toxic | 14m | - | + | - | + | 10 | 84.6 | 81 |
| 35 | 50 | F | Toxic | 3m | + | + | + | + | 9 | 92.8 | 90 |
| 36 | 35 | M | Toxic | 5m | + | + | + | + | 10 | 96.5 | 85 |
| 37 | 60 | F | Toxic | 9y | + | + | + | + | 8 | 86.4 | 86 |
| 38 | 27 | F | Toxic | 6m | + | + | + | + | 8 | 91.3 | 76 |
| 39 | 35 | F | Toxic | 7m | + | + | + | + | 8 | 88.3 | 72 |

Dur. : Duration

(y) : years

(m) : months

Nod. : Simple nodular goiter

Wt. : Weight in gms

Vol. : Volume in c.c.

Parathyroid Gland Function

Table 2 : Serum Calcium, Phosphorus, Alkaline Phosphatase and Parathormone Levels Before and After Operation

| S.N | Serum Calcium (mg%) | | Serum Phosphorus (mg%) | | Serum Alkaline Phosphatase (U/L) | | Serum Parathormone (P. mole/L) | |
|-----|---------------------|------|------------------------|------|----------------------------------|------|--------------------------------|-------|
| | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| 1 | 10.8 | 10.1 | 4.0 | 4.1 | 158 | 147 | 71.53 | 19.50 |
| 2 | 10 | 8.8 | 3.5 | 3.0 | 206 | 164 | 15.61 | 19.22 |
| 3* | 11.9 | 8.8 | 3.5 | 4.1 | 186 | 131 | 52.23 | 47.82 |
| 4 | 9.3 | 9.1 | 3.5 | 3.9 | 131 | 135 | 42.71 | 37.46 |
| 5 | 11.3 | 10.8 | 3.6 | 3.6 | 115 | 113 | 72.96 | 65.89 |
| 6 | 8.3 | 10.3 | 2.5 | 3.0 | 197 | 284 | 58.58 | 58.34 |
| 7 | - | - | - | - | - | - | - | - |
| 8* | 12.2 | 6.8 | 2.8 | 3.2 | 158 | 165 | 39.48 | 14.64 |
| 9 | 9.4 | 8.0 | 3.6 | 3.9 | 126 | 120 | 54.72 | 47.92 |
| 10* | 9.7 | 6.1 | 2.5 | 3.2 | 164 | 191 | 50.76 | 34.62 |
| 11 | 9.2 | 8.5 | 3.4 | 3.6 | 143 | 131 | 72.53 | 52.23 |
| 12 | 9.8 | 11.2 | 3.2 | 3.6 | 235 | 230 | 41.98 | 39.66 |
| 13 | 10.2 | 9.2 | 3.2 | 3.6 | 191 | 197 | 48.13 | 37.20 |
| 14 | 10.7 | 11.0 | 3.6 | 3.8 | 185 | 192 | - | - |
| 15 | 8.8 | 8.5 | 3.5 | 4.1 | 158 | 186 | 44.21 | 33.16 |
| 16 | 10.3 | 9.7 | 2.9 | 3.2 | 119 | 115 | 50.13 | 40.80 |
| 17 | 10.6 | 9.5 | 3.6 | 4.0 | 240 | 251 | 51.44 | 44.16 |
| 18* | 8.5 | 6.5 | 3.5 | 3.2 | 71 | 115 | 64.45 | 40.49 |
| 19* | 9.6 | 7.6 | 2.8 | 3.2 | 191 | 197 | 75.37 | 40.40 |
| 20 | 11.2 | 11.9 | 3.6 | 3.5 | 190 | 186 | 46.37 | 44.40 |
| 21 | - | - | - | - | - | - | - | - |
| 22* | 8.3 | 6.9 | 3.4 | 3.6 | 126 | 131 | 48.07 | 29.25 |
| 23 | 10.4 | 11.5 | 3.1 | 3.5 | 112 | 97 | 76.35 | 44.41 |
| 24 | 10.8 | 12.1 | 3.4 | 2.7 | 153 | 158 | 42.15 | 42.69 |
| 25 | 11.3 | 9.7 | 3.2 | 3.4 | 245 | 230 | 56.71 | 37.56 |
| 26 | 10.1 | 9.2 | 3.5 | 3.2 | 104 | 82 | 35.16 | 31.00 |
| 27 | 8.5 | 8 | 3.2 | 3.5 | 147 | 104 | 41.72 | 35.60 |
| 28 | 9.5 | 9.5 | 3.5 | 3.5 | 169 | 158 | 90.57 | 71.05 |
| 29 | 10.2 | 8.9 | 2.5 | 2.8 | 87 | 91 | 35.11 | 28.53 |
| 30* | 9.1 | 6.8 | 3.2 | 3.5 | 110 | 104 | 53.82 | 29.46 |
| 31* | 10.6 | 6.0 | 3.0 | 2.5 | 291 | 273 | 67.45 | 24.93 |
| 32* | 10.6 | 7.8 | 3.1 | 3.4 | 197 | 191 | 67.24 | 22.75 |
| 33 | 10.8 | 9.5 | 3.9 | 4.1 | 237 | 221 | 63.72 | 50.73 |
| 34 | - | - | - | - | - | - | - | - |
| 35 | 11.3 | 8.7 | 3.5 | 3.7 | 236 | 228 | 58.27 | 40.68 |
| 36 | 10.9 | 10.1 | 3.2 | 3.4 | 217 | 208 | 73.14 | 58.35 |
| 37* | 9.8 | 8.3 | 3.6 | 3.7 | 182 | 154 | 61.83 | 36.95 |
| 38 | - | - | - | - | - | - | - | - |
| 39* | - | 6.4 | - | 4.2 | - | 236 | - | 25.40 |

* Patient developed clinical symptoms of overt or latent tetany (all in the first 3 postoperative days).

Wade (1972) found that postoperative hypocalcaemia produced tetany except rarely. In this work, all patients with postoperative hypocalcaemia developed tetany whether latent (numbness, tingling, parasthesia and positive Chvostek's sign) or overt (carpopedal spasms). Only one patient with serum calcium of 8mg% did not show tetany.

Behrs and Vandertoll (1963) reported 1-3% incidence of postoperative tetany. Our patients showed a high incidence of 31%, being overt in 20% and latent in 11%.

Tetany appeared on the second or third postoperative day in all the patients, except 2 who presented early on the first postoperative day. In

one of these two patients, tetany was only transient, so that 8 days after operation the serum levels of calcium, phosphorus and parathormone became normal. Since this patient was not thyrotoxic, the only explanation for his early transient tetany is thyrocalcitonin release during surgery. This agrees with the findings of Wilkin et al. (1977) and Watson et al. (1981). In the second patient with early tetany, the goitre was toxic, the serum calcium and parathormone levels 7 days after operation were low while the serum alkaline phosphatase level was high. Early tetany in this second patient could be due to the following factors:

1. Corrected thyrotoxic osteodystrophy;
2. Parathyroid gland injury;
3. Failure of the parathyroids to respond to the low serum calcium, being suppressed by preoperative hypercalcaemia;
4. Thyrocalcitonin release during surgery.

However, Wilkin et al. (1977) and Watson et al. (1981) stated that the first two factors alone cannot explain early tetany.

Wade (1972) noted that postoperative tetany disappeared with the lapse of time despite hypocalcaemia, as the nerve endings become acclimatized to the low serum calcium level. This observation was true in two of our patients with tetany who were followed for a long time.

In this study, the postoperative incidence of hypocalcaemia was 28% and of hypoparathyroidism 20%. This discrepancy supports that postoperative hypocalcaemia is not only due to operative parathyroid gland injury, but also due to other factors as corrected thyrotoxic osteodystrophy or release of thyrocalcitonin.

A 20% incidence of postoperative hypoparathyroidism in this series is much higher than 4.5% incidence reported by Wade (1972). This could be due to ligation of the trunk of the inferior thyroid artery on both sides in most of our patients. It is noteworthy that hypoparathyroidism was less frequent if this artery was not ligated on one or both sides, but the incidence is still high. Again, this may be due to the fact that enough attention was not paid to the parathyroid glands during thyroid surgery.

CONCLUSIONS

The following precautions are recommended to minimize postoperative hypoparathyroidism:

1. The trunk of the inferior thyroid artery is better not ligated, but its capsular branches controlled.
2. During exposure of the recurrent laryngeal nerve, trauma is minimized and if one of the parathyroids is encountered, care is taken to protect it and its vascular pedicle.

3. A generous part of the posterior thyroid capsule is left to protect the parathyroids.
4. It is best to cut the thyroid gland cleanly with a knife without clamping, then ligate the individual bleeders.
5. Deep sutures to control intraglandular bleeders are better avoided.
6. It is advisable not to suture the thyroid remnant to the tracheal sheath.
7. Any parathyroid gland accidentally removed or devascularized should be implanted immediately into the near sternomastoid muscle.

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WOUND MANAGEMENT IN GENERALIZED PERITONEAL PURULENCE

BY

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ABSTRACT

Sixty four patients with generalized peritoneal purulence were randomly divided into two groups. In the first group, conventional wound closure, with complete closure of the subcutaneous tissue and skin was done. In the second group, the skin and subcutaneous tissue were left open for delayed primary closure. Regarding wound infection, dehiscence and time of hospital stay, the results were significantly better for the second group of patients.

INTRODUCTION:

Wound infection is the most common complication in the surgical patient with generalised peritoneal purulence. (Ackerman, 1974). Despite the optimal use of preoperative antibiotics, the incidence of infection in primarily closed wounds in cases of generalized peritoneal purulence remains unacceptably high at a rate of about 30% (Todd, 1968). Although it is usually an easily managed complication, yet it results in prolonged hospitalization and disability requiring weeks or even months for secondary intention healing. For this reason efforts have been made to reduce this complication using skillful adjunctive measures.

Delayed primary closure is a well known method aiming at preventing infection Following closure of heavily contaminated wounds (Grosfeld and Solit, 1968). In a trial to challenge this method, a comparative study between delayed primary closure and primary closure (with special precautions) in cases of generalized peritoneal purulence is herein presented.

MATERIAL AND METHODS:

Sixty four consecutive patients with generalized peritoneal purulence (GPP) were included in this study starting from May 1984 till July 1987. The age of these patients ranged from 11 to 64 years with an average of 37 years. Twenty four of these patients were females and 40 were males.

In all cases rigid surgical rules were followed departing only in the method of closure of the skin and subcutaneous tissues.

Cases were randomly selected on alternating basis either for primary or delayed primary closure of the wound. Certain points were adopted:

1. All cases were explored by a midline incision.
2. I.V. systemic antibiotics that included third generation cephalosporins and flagyl were used preoperatively in all cases, one hour before induction of anaesthesia.

The third generation cephalosporin was used for 4 days postoperative by starting 2 hours after operation, flagyl was used only when needed for example in perforated appendicitis, perforated diverticular disease or perforated gall bladder.

3. The peritoneum and linea alba were closed in one layer using (O) polypropylene (Prolene) interrupted sutures.

4. High pressure irrigation of the wound using normal saline was done to mechanically disrupt bacterial adherence to the wound surface. Tobin (1984) found that the dilutional effects of unpressured irrigation remove some bacteria, but the quantities removed are usually not sufficient to cross the infective threshold. To be clinically effective, irrigants should be delivered by a fluid jet impacting on the wound with 7 pounds of pressure per square inch. This level of pressure can be generated by forcefully expressing saline from a 35 cc syringe through an 18-gauge needle (Maden et al., 1971). Finally, topical ampicillin solution was applied.

5. Skin closure: Patients were divided into two groups:

A. Group A (immediate wound closure):

A subcutaneous soft penrose drain was inserted and the skin closed with interrupted sutures using (OO) Prolene.

B. Group B (delayed primary closure):

A layer of fine gauze impregnated in povidone iodine 5% was placed on the wound surface, and a bulky dry dressing was applied. No clinical signs of inflammation were detected in all cases, the dressing was left undisturbed and the wound was closed on the 5th postoperative

- day with (OO) interrupted prolene sutures.
6. All patients who developed complications other than wound problems, such as residual intraperitoneal abscesses, septicaemia, pyemia,... etc., were excluded from the study.

RESULTS:

The causes of GPP is shown in Table (1) with perforated appendix as the commonest cause forming 72% of cases.

Table (1): Causes of GPP

| Causes of GPP | No. of patients | % |
|-------------------------------|-----------------|------|
| Perforated appendix | 46 | 72.0 |
| Perforated duodenal ulcer | 10 | 15.5 |
| Perforated gastric ulcer | 2 | 3.0 |
| Ruptured diverticular abscess | 1 | 1.5 |
| Perforated cholecystitis | 5 | 8.0 |
| Total | 64 | 100 |

Table (II): Hospitalization time for groups A and B

| Group | Range (days) | Average (days) |
|--|--------------|----------------|
| A. Patients with immediate wound closure | 8-38 | 22 |
| B. Patients with delayed primary closure | 12-17 | 14 |

The average days of hospitalization for group B was 38% less than for patients of group A. This is statistically significant ($P < 0.01$).

Table (III): Postoperative wound problems for both groups

| Complication | Group A | | Group B | |
|--|---------|-------|---------|------|
| | No. | % | No. | % |
| Minor wound infection (Stitch abscess) | 2 | 6.25 | 1 | 3.12 |
| Major wound infection | 6 | 18.75 | — | — |
| Wound dehiscence | 2 | 6.25 | — | — |
| Mortality | 1 | 3.12 | — | — |

There was statistically significant difference in total complication rate between group A (34.75%) and group B (3.12%) ($P < 0.01$).

In group A patients, all infected wounds were drained and left to heal by secondary intention using daily dressing. Two patients developed wound dehiscence on the 7th and 9th postoperative days. Wounds were immediately repaired in one layer using through-and-through tension silk sutures. One

of the two patients died in the second postoperative day from septicaemia.

In group (B), minor wound infection occurred only in one patient. This was a diabetic patient under insulin control. The stitch abscess found was drained by stitch removal and the patient was discharged on the 17th postoperative day with his wound clean and completely healed.

DISCUSSION:

Various techniques have been used to reduce the wound infection rate in abdominal surgery. Despite the optimal use of preoperative antibiotics, the incidence of infection in primarily closed contaminated wounds remains unacceptably high, at about 30% (Todd, 1968). The delayed primary wound closure technique was discovered by French army surgeons in World War I (Coller and Valk, 1940). Since its introduction, the technique has changed little. Mervine et al. (1973) were successful in eliminating wound infections in 415 patients with contaminated wounds by employing polypropylene fascial sutures and povidone iodine dressings. Their wounds were closed with skin tapes between the 5th and 21st postoperative days. Edlich et al. (1969) demonstrated that primary closure decreased the infection rate from 22% with closure on postoperative day 1 to 3% with closure on day 4. In our series, 25% of patients with immediate wound closure developed wound infection in spite of the use of prophylactic parenteral antibiotics, local wound irrigation and local antibiotics. While in the second group where delayed wound closure was adopted, only 3.12% of patients developed wound infection that was minor and easily controlled, just like the results obtained by Edlich et al. (1969). The total complication rate showed statistically significant difference in our two groups of patients ($P < 0.01$).

There are many studies however, that demonstrate reduction in wound infection rates in closed wound. Halasz (1977) demonstrated a 50% reduction in wound infection rates using ampicillin solution in the subcutaneous space before closure. Closed suction wound catheters were used by Alexander et al. (1976) in renal transplant patient, and their 3% wound infection rate contrast with 14% in a similar series without drainage. McIlrath et al. (1976) irrigated the closed suction catheter with triple antibiotics and achieved an 0.8% wound infection rate. But all these studies were done for clean or clean contaminated wounds.

However, in a study done by Zelko and Moore (1981) on primary closure of contaminated wound using McIlrath's technique of closed wound irrigation, wound infection occurred in 5% in their first group of patients for whom regular wound irrigation every 6 hours with 10 ml. of solution containing 3 antibiotics (Neomycin 0.5 gm., Polymyxin 1 gm. and Gentamycin 80 mg./L) was done for 5 days. In their second group where the wound was irrigated with povidone iodine 1% 6 hourly for 5 days the infection rate was 12%. This shows that infection rate in closed contaminated abdominal wounds is still high in spite of any precautions done. In our series still a very low infection rate 3.2% is recorded

for cases with delayed primary closure.

Two of our patients with primary wound closure developed wound dehiscence, a complication that did not occur for patients with delayed primary closure.

In our study, hospitalization time averaged 22 days for patients with immediate wound closure while it was only 14 days for those who had delayed primary wound closure. The hospitalization time of group B was 34% less than that of group A, a statistically significant difference ($P < 0.01$). The reason for the prolonged hospitalization time in the first group was the high incidence of wound infection.

The two groups of patients presented are nearly similar in degree of contamination, procedures, suture material and systemic and local antibiotics. It was not possible to analyze the contribution of surgical technique, length of operation and other factors that may be important in wound infections.

Delayed primary wound closure is a technique of proven effectiveness for lowering the incidence of postoperative wound infection in heavily contaminated wounds (Tobin, 1984a). Although, it imposes a considerable burden on the patient and the surgeon, yet it provides the least incidence of wound infection, causes minimal or no other wound complications, necessitates minimal skill and care and requires less time for hospitalization and consequently less expenses.

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SOFT TISSUE MAMMOGRAPHY AND PROLACTIN LEVEL IN PATIENTS WITH MASTODYNIA

BY

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ABSTRACT

A series of 22 patients complaining of mastodynia were subjected to soft tissue mammography and estimation of prolactin hormone in the blood. Soft tissue mammography revealed that the pattern of breast substance was lipomatous in 18%, glandular in 9% and mixed in 73% of cases. Evidence of thickening in the major ducts was found in 70% of patients, while 32% showed calcification and a mass was visualized in 27%. The prolactin level was normal in 19 patients and slightly raised in two cases. One patient who had marked rise of the prolactin level proved to have a pituitary adenoma by CT scan examination.

INTRODUCTION:

Mastalgia or, as it is often referred to, mastodynia is a term used to describe symptom of pain in the breast which may or may not be accompanied by nodularity (Haggensen, 1971; Nichols, 1980). It is generally held that such pain, popularly known as mastodynia is associated with some hormonal changes although no precise hormone abnormality has been identified. Peters et al (1980) reported that the oestrogen level was higher in patients with mastodynia and that the drop of the oestrogen level after the use of Danazol was associated with relief of symptoms. Shaaban et al (1980) also noticed the therapeutic value of the antioestrogen (Tamoxifen) in the relief of breast pain.

Other authors believe that a low progesterone level is responsible for mastodynia. Sitruk et al (1979) reported low progesterone levels in the luteal phase in their patients with benign breast disease. In a series of 33 patients, Colin et al (1978) found 7 days before the period that the progesterone was frequently decreased while the prolactin was increased and they reported the beneficial therapeutic value of Lynestrenol (Gestagen) in the treatment of mastodynia.

Contrary to the previous views, England et al (1975) did not detect any abnormality of progesterone level in patients with mastodynia during the menstrual cycle, while Anderson et al (1977) re-

ported normal levels of serum oestrogen and progesterone and the level of these hormones remained unchanged after relief of pain by the use of bromocriptine.

Gonadotrophins were also suspected to play a role in mastodynia. Buckle et al (1980) found that the level of F.S.H. and L.H. decreased after the use of the antigonadotrophin (Danazol) and that this decrease was associated with relief of breast pain. However, Peters et al (1980) reported that the level of F.S.H. and L.H. was normal in patients with mastodynia and that the level of both hormones remained unchanged after the use of Danazol. These authors believed that the effect of Danazol was due to ovarian suppression rather than to its antigonadotrophin property.

The possible role of prolactin in the initiation and maintenance of fibrocystic disease is still controversial, although many observations suggest that prolactin is involved. Malarkey et al (1977), studying the mean 24 hours prolactin concentration in control subjects and in patients with benign breast disease, failed to find any significant difference between the two groups.

Mansel et al (1980) reported that there are two types of breast pain, viz; cyclical and non-cyclical. The cyclical pain occurs mainly in the luteal phase of the cycle, and is terminated by the onset of menstruation. This pain usually occurs in premenopausal women. The non-cyclical pain tends to be in an older age group, who are both pre and postmenopausal and the pain is unrelated to the menstrual cycle. It was also found that cyclical pain was significantly improved by bromocriptine while non-cyclical pain failed to respond (Mansel et al., 1980).

Schulz et al (1975) found that the level of prolactin in patients with mastodynia was normal although most patients had a favourable response to bromocriptine which caused a fall in the level of prolactin. In a minority of cases, there was no response to treatment but still the level of prolactin dropped after intake of the drug. The authors concluded that prolactin, although probably very important, cannot be the only decisive factor in the

hormonal control of mastodynia.

Soft-tissue mammography is a relatively recent addition to the methods of diagnosis of breast disease. It depends upon the difference in the radiographic densities of the various tissues composing the breast, fatty tissue giving radiolucent areas while fibroglandular tissue appearing as dense areas. For practical purposes, the most important value of soft tissue mammography is detection of small masses which cannot be felt clinically and distinction between benign and malignant masses.

It is now generally accepted that soft-tissue mammography can demonstrate lesions as small as 3 or 4 mm (Egan, 1977).

In case of a malignant breast mass the radiological size of the mass will be less than its clinical size. The mass will be dense and its outline is irregular and spiculated. Calcification is frequent and occurs in the form of fine sand-like granules, or small punctate deposits which do not coalesce. Thickening of the skin can appear radiologically long before it is apparent clinically. A marked increase in the size of the veins is usually present in carcinoma (Lester & Juhl, 1927) and retraction or distortion of the nipple and areola may be present.

The benign breast mass is usually smooth, has a well circumscribed border, is round, oval or lobulated, is noninvasive and has a homogeneous density.

The mass may be surrounded by a thin layer of radiolucent fat (Egan, 1977) and the radiological size of the mass is equal to or larger than the clinical size. Calcification, if present, is coarse and confined to the periphery of the lesion. Such calcification is often bilateral in contrast to the unilateral calcifications of carcinoma (Lester and Juhl, 1972).

The aim of the present study is to reveal the radiological changes in the breast in cases of mastodynia using soft tissue mammography, and to investigate the possible role of prolactin in this problem.

MATERIAL AND METHODS

The present study was done on 22 female patients complaining of mastodynia. All patients were multiparous and non-lactating, without any history of hormonal intake in the year preceeding the examination. Special enquiry about type of breast pain and its relation to the period was made. A thorough clinical examination of both breasts was done.

Soft-tissue mammography was done to all patients, craniocaudal and medio-lateral views being taken for every case. The serum prolactin was estimated in all patients using the radioimmune assay technique. The details of the clinical findings and those of soft tissue mammography and the results of serum prolactin are summarized in tables 1&2 and in Figures 1-6.

Table 1. Clinical Findings in 22 Patients
Complaining of Mastodynia

| Case No. | Age | Parity | Type of pain | Tenderness | Discharge | Masses |
|----------|-----|--------|--------------|------------|---------------|-------------------------|
| 1. | 23 | 1 | Cyclical | + | - | - |
| 2. | 24 | 2 | Acyclical | - | - | - |
| 3. | 25 | 2 | Cyclical | - | - | - |
| 4. | 36 | 1 | Acyclical | + | - | Bil. Diffuse nodularity |
| 5. | 34 | 3 | Acyclical | + | - | - |
| 6. | 29 | 1 | Cyclical | - | - | - |
| 7. | 26 | 2 | Acyclical | + | - | - |
| 8. | 28 | 1 | Acyclical | - | - | - |
| 9. | 28 | 3 | Cyclical | + | - | - |
| 10. | 30 | 4 | Cyclical | - | - | - |
| 11. | 23 | 3 | Cyclical | - | - | - |
| 12. | 30 | 3 | Acyclical | - | - | - |
| 13. | 32 | 2 | Cyclical | - | - | Bil. Diffuse nodularity |
| 14. | 28 | 2 | Acyclical | - | - | - |
| 15. | 29 | 1 | Cyclical | - | - | - |
| 16. | 25 | 1 | Acyclical | - | - | - |
| 17. | 25 | 4 | Cyclical | - | - | - |
| 18. | 35 | 4 | Acyclical | - | Galactorrhoea | - |
| 19. | 38 | 5 | Acyclical | + | - | - |
| 20. | 30 | 5 | Cyclical | - | - | - |
| 21. | 34 | 2 | Acyclical | + | - | - |
| 22. | 30 | 2 | Cyclical | - | - | - |

Table 2. Soft Tissue Mammography and Serum Prolactin
in 22 Patients with Mastodynia

| Soft Tissue Mammography | | | | Prolactin |
|-------------------------|---|--------------------|---------------|------------------------------|
| | Breast tissue | Ducts | Calcification | Masses |
| | | | | N: 1.3-20.8 ng/ml |
| 1 | Lipomatous | Thin | | Lt. 1.5 cm retroareolar |
| 2 | Mixed-more lipomatous | Thick | | - |
| 3 | Mixed-more lipomatous | | | - |
| 4 | Mixed | Thick | Linear | - |
| 5 | Lipomatous | Lt thick | | - |
| 6 | Mixed-more glandular | Lt thick | Fine | - |
| 7 | Mixed-more glandular | Lt thick | | - |
| 8 | Mixed-more lipomatous | Rt thick | Fine | - |
| 9 | Lipomatous | Thick | | - |
| 10 | Rt more glandular Lt more lipomatous | Thick | | - |
| 11 | Lipomatous | Lt thick | | - |
| 12 | Rt.-more lipomatous Lt.-more glandular | | | - |
| 13 | Mixed | Rt thick | Ducts | Rt.-small nodules |
| 14 | Mixed | Rt thick | Ducts | - |
| 15 | Mixed-more lipomatous | Thick | | Bi small nodules |
| 16 | Mixed-more glandular | Thick | | Rt. small nodules |
| 17 | Glandular | Thick | | - |
| 18 | Mixed-more glandular | | | - |
| 19 | Lt.-more glandular Rt.-more lipomatous | Rt duct ectasia | Ducts | Bi small nodules |
| 20 | Mixed-more glandular | - | - | - |
| 21 | Mixed-more lipomatous | | | Rt well defined oval mass |
| 22 | Glandular | Lt thick | Rt ductules | - |

DISCUSSION

Mastodynia is an extremely common symptom, both in its own right and also as a feature of the pre-menstrual tension syndrome, which is estimated to occur in about of 40% of women (Mansel et al, 1980). In the present study the pain was cyclical in half the cases and non-cyclical in the other half. The mean age of patients with cyclical pain was 28 years. In the non-cyclical pain group the mean age was 33 years. These findings conform with those of Mansel et al (1982) who detected that non-cyclical mastodynia tends to occur in an older age group than cyclical mastodynia. Nipple discharge in the form of galactorrhoea was present in only one patient who proved to have a pituitary adenoma after CT scan (Fig. 6). Breast tenderness was present in 40% of cases while diffuse nodularity on palpation was detected in only two patients.

Very few reports in the literature studied the radiological findings in mastodynia. In the present study, the pattern of breast parenchyma was mainly lipomatous in 18% of cases (Fig. 1) while it was mainly glandular in 9% (fig. 2). In 73% of cases the breast parenchyma revealed a mixture of glandular and lipomatous patterns. The major ducts were thickened in 70% of cases (Fig. 3). Evidence of calcification was present in 32% of cases (Fig. 4). The calcification was linear in one case while it was fine in two cases. In four cases the calcification was mainly affecting the ducts. Soft tissue mammography revealed a mass in 6 cases. A Well-defined mass was visualised in 2 patients (fig. 5) while in four cases there were multiple small nodules. It is to be noted that in those patients the masses were not detected clinically except in one case where there was diffuse nodularity of the breast. The fact that soft tissue mammography could visualise a mass in 27% of patients complaining of mastodynia should direct the attention that this complaint may denote an underlying breast pathology.

According to most authors, the level of prolactin in patients with mastodynia is normal (Schulz et al., 1975 & Malarkey et al., 1977). Our findings confirm this conclusion. Out of 22 cases the prolactin level was normal in 19 patients. In two cases the level of prolactin was slightly higher than normal. There was marked rise of prolactin level in one patient who proved to have a pituitary adenoma after CT scan of the brain. This patient was complaining of galactorrhoea in addition to mastodynia but the clinical examination and soft tissue mammography were normal.

from this study we do not recommend to do a routine estimation of serum prolactin in patients complaining of mastodynia as it is expected to be normal in the majority of cases. Patients with

galactorrhoea should have estimation of serum prolactin and CT scan to the brain to exclude the presence of a pituitary adenoma.

SUMMARY AND CONCLUSIONS

Mastodynia is the commonest presentation of breast disease in general practice. It is generally held that mastodynia is associated with some hormonal changes, but no precise hormone abnormality has been identified.

In the present study, soft tissue mammography was done to 22 patients complaining of mastodynia. The pattern of breast parenchyma was lipomatous in 18%, glandular in 9% and mixed in 73% of patients. Thickening of the major ducts was detected in 70% of cases. In 32% of patients there was calcification in the breast. A mass was visualised in 27% of cases and in those patients no mass was felt clinically except in one case.

The present work confirmed that the serum prolactin level is usually normal in patients with mastodynia. Out of 22 cases, the serum prolactin was normal in 19 patients and slightly raised in 2 cases. One patient who had galactorrhoea and showed marked rise of serum prolactin, proved to have a pituitary adenoma after CT scan examination of the brain. We do not recommend routine estimation of serum prolactin in patients with mastodynia except if there is galactorrhoea.

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Fig.1. Soft tissue* mammography of case 5 showing that the breast is mainly lipomatous.



Fig. 2. Soft tissue mammography of case 17 showing that the breast is mainly glandular.

Fig. 3. Soft tissue mammography of case 19 shoing right duct ectasia.



Fig. 4. Soft tissue mammography of case 14 showing calcification of the ducts.





Fig. 5. Soft tissue mammography of case 21 showing right well defined oval mass.

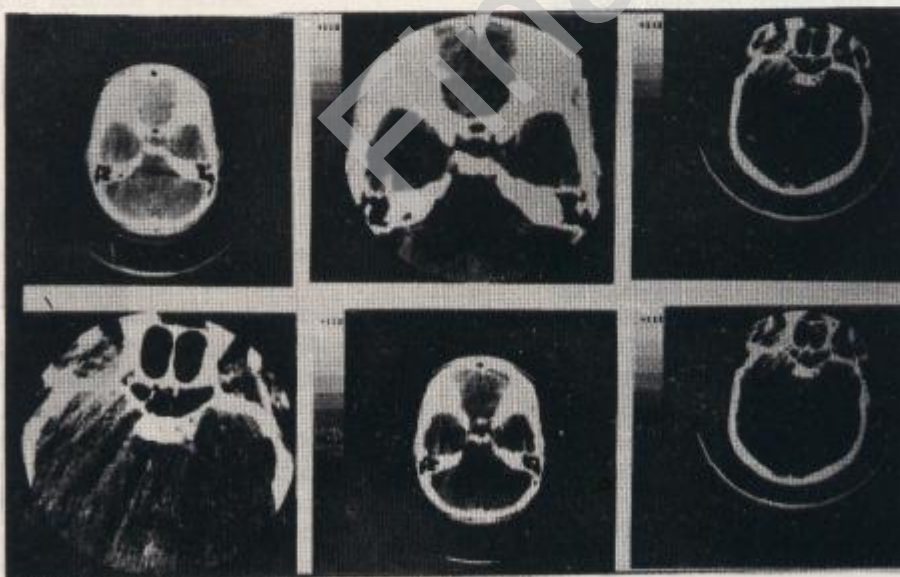


Fig. 6. CT scan of case 18 showing a pituitary adenoma.

CLINICAL EXPERIENCE WITH ORTHOCLONE OKT₃ IN RENAL TRANSPLANTATION

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ABSTRACT:

Monoclonal antibody, orthoclone OKT₃ has been used with great efficiency in the treatment of first rejection episodes in cadaveric CD renal allografts in Protocol using prednisone and azothioprine, recurrent rejection occurred in about 2/3 of OKT₃ treated patients⁽⁶⁾.

OKT₃ was reserved to treat rejection episodes resistant to 3 bolus injections of methyl-Prednisone 5-10mg/kg. in cadaveric renal graft recipients using prednisone, azothioprine and cyclosporine.

Using this protocol 35 of 52 rejection episodes diagnosed between 10/1986 and 4/87 in Cadaveric renal allograft recipients were treated successfully with methyl-Prednisone, of the remaining 17 steroid-resistant rejection episodes, 16 were reversed with a 10 days course of OKT₃, 5mg/day. only 2 recurrent rejection episodes (11%) have been observed in 6 Months follow up after OKT₃ treatment. The result of this work confirm our observation that OKT₃ as a second weapon for steroid-resistant rejections gives excellent results with low incidence of recurrent rejection.

INTRODUCTION:

The cells play a crucial role in most cases of acute rejection, there is rational for using the monoclonal antibody orthoclone OKT₃ for prevention or treatment of rejection.

OKT₃ was introduced clinically by Cosimi et al in 1981. OKT₃ is an Ig G₂, its action directed towards The cell which is mainly involved in acute rejection (kohler,³ 1975.)

The cell surface has 2 molecules on its surface that specifically recognize antigenicity. These antigen recognition structures are associated with 3 polypeptide chains (T₃ - complex) that transduce the signal for the T-cell after antigen recognition enabling the T-cell to react to foreign allograft, proliferate, and kill the foreign allograft, the T₃ cells perform these function via the antigen recognition structures, but the signal that leads to functional effect is mediated through T₃ complex, (Goldstein, 1986).

Thus, OKT₃ is a monoclonal antibody that specifically reacts with T₃- complex, blocks the function of

T cells. So it is a drug that blocks the T cell effector function involved in Allograft Rejection.

MATERIAL AND Methods:

17 cadaveric renal allograft recipients whose baseline immunosuppression consisted of cyclosporine, azothioprine and prednisone were treated for acute steroid resistant rejection with OKT₃.

TREATMENT PROTOCOL:

- **Cyclosporine** 12 mg/kg body weight tapered to 4 mg/kg by 4 months in patients with stable graft functions.
- **Azothioprine** 5mg/kg at the day of operation tapered to 2m.
- **Methyl-Prednisone** 10 mg/kg, 5mg/kg and 2mg/kg was given I.V. on Post transplant days 0,1 and 2 respectively; on day 3, oral prednisone, 0.5 mg/kg/day, was begun and slowly tapered to a dose of 0.15 mg/kg/day.

REJECTION TREATMENT:

In all patients, diagnosis of rejection was suspected clinically and confirmed by biopsy. All rejection episodes were first treated with MP, 5-10 mg/kg/day I.V. For 3 days, in addition to baseline immunosuppression. No further anti-rejection therapy was given to patients whose serum creatinine decreased to its pretreatment level and remained at that level for at least one week subsequent rejection episodes were again treated with high dose steroids.

In rejection episodes where serum creatinine did not fall or initially fell but increased within 7 days, renal biopsy was obtained. If the diagnosis of rejection was Proved patients were admitted to hospital and OKT₃ 5 mg/day was administered as a single daily peripheral I.V. bolus for 10 days. If a pretreatment chest X-ray suggested fluid overload or if weight had increased more than 3% in the preceeding 7 days, patients were not treated with OKT₃ until weight reduction had been achieved by diuresis or dialysis.

A single I.V. dose of MP (500mg in adult, 10mg/kg in Children) was given 6-12hr before 1st dose of OKT₃, hydrocortisone 100mg I.V., was given 30 minutes after initial OKT₃ dose. Starting with day of OKT₃ treatment, CSA was discontinued and

AZA reduced to 25mg/day. 3days before stopping OKT₃ CSA and AZA were returned to their Pre-OKT₃ dose.

RESULTS:

Between October 1986 and April 1987, there was 52 rejection episodes in 50 CD renal transplant recipients treated with steroid bolus therapy 35 episodes were resolved, the other 17 rejection episodes were classified as steroid resistant and treated with monoclonal antibody OKT₃ the profile of the 17 pts who experienced steroid resistant rejections and were treated with OKT₃ is shown in table I.

Table II. Gives a summary of the course of each patient treated with OKT₃. Patients were divided into 2 groups, those who failed to respond to MP pulses at all, receiving OKT₃ on the next day, and those who had an initial incomplete response to MP the interval between MP and OKT₃ therapy appeared to have no effect on treatment outcome, as rejection episodes were reversed in 16 of 17 patients.

Other complication experienced by these 17 CD renal graft recipients have been side effects from initial doses of OKT₃. With avoidance of giving OKT₃ to patients in pulmonary edema and with patient pre-medication with steroids, no serious respiratory complication have been encountered, 4 patients have had wheezes audible on auscultation and 1 experienced mild dyspnea following the first dose of OKT₃, the frequency of various patient reactions to initial doses of OKT₃ is as follows:

| | |
|--------------|------|
| fever | 100% |
| hypertension | 30% |
| chills | 30% |
| headache | 25% |
| Nausea | 20% |
| Wheezing | 14% |
| Myalgia | 14% |
| Pruritis | 11% |

2 patients No. 12 & 15 experienced re-rejection (40 days and 59 days Post treatment).

| Patient | Age | Sex | Original Disease | HLA DR Class II | Immunosuppression | Re-rejection | Infection |
|---------|-----|--------|--------------------------|-----------------|-------------------|--------------|----------------------------------|
| 1 | 30 | male | Hypertension | 2 / 0 | CSA, AZa, P | -- | -- |
| 2 | 39 | male | " " | 1 / 0 | " " " | -- | Herpes simplex |
| 3 | 35 | female | glomerulo-nephritis | 1 / 0 | " " " | -- | Herpes simplex |
| 4 | 40 | male | Hypertension | 2 / 0 | " " " | -- | Herpes simplex |
| 5 | 40 | male | Hypertension | 0 / 0 | " " " | -- | -- |
| 6 | 35 | female | glomerulo-nephritis | 0 / 0 | " " " | -- | Staph infection |
| 7 | 25 | male | Hypertension | 2 / 0 | " " " | -- | -- |
| 8 | 17 | female | Focal glomerulosclerosis | 1 / 0 | " " " | -- | -- |
| 9 | 25 | female | unknown | 0 / 0 | " " " | -- | enterococci |
| 10 | 45 | male | glomerulonephritis | 0 / 1 | " " " | -- | Cytomegalovirus (CMV) |
| 11 | 10 | male | obstructive uropathy | 2 / 1 | " " " | -- | -- |
| 12 | 40 | male | Hypertension | 1 / 1 | " " " | 40 days | Herpes simplex (CMV) & Staph inf |
| 13 | 43 | male | glomerulonephritis | 0 / 0 | " " " | -- | -- |
| 14 | 50 | male | Diabetes | 0 / 0 | " " " | -- | -- |
| 15 | 11 | male | F.glomerulosclerosis | 0 / 1 | " " " | 59 days | -- |
| 16 | 34 | male | Hypertension | 0 / 1 | " " " | -- | -- |
| 17 | 37 | female | glomerulonephritis | 0 / 0 | " " " | -- | -- |

Table I.
CSA = Cyclosporine, AZa = Azathioprine, P = Prednisone.

| Patient | Pre-rejection creatinine | Creatinine post steroid | Days between steroid & OKT ₃ | Peak Cr during OKT ₃ | Days to reversal | Creatinine at end of OKT ₃ | Lowest Cr level |
|---------|-----------------------------|----------------------------|--|------------------------------------|---------------------|--|--------------------|
| 1 | 2.6 | 4.5 | 1 | 5.2 | 9 | 2.6 | 0.9 |
| 2 | 1.7 | 3.1 | 6 | 5 | 3 | 2.4 | 1.9 |
| 3 | 5.8 | 7.6 | 7 | 11.5 | - | 8.2 | --- |
| 4 | 13.5 | 11.3 | 1 | 11.8 | 13 | 11.1 | 1.2 |
| 5 | 1.8 | 3.4 | 1 | 5.1 | 8 | 5.1 | 2.2 |
| 6 | 1.9 | 2.4 | 2 | 2.7 | 3 | 2.2 | 1.7 |
| 7 | 3.5 | 3.6 | 5 | 6.7 | 4 | 3.9 | 1.8 |
| 8 | 9.4 | 11.5 | 2 | 13.2 | 29 | 8.0 | 2.1 |
| 9 | 2.0 | 10.8 | 2 | 11.3 | 8 | 6.5 | 3.1 |
| 10 | 3.0 | 7.5 | 1 | 11.6 | 5 | 5.9 | 4.1 |
| 11 | 2.4 | 2.8 | 7 | 4.9 | 4 | 3.3 | 0.9 |
| 12 | 5.0 | 6.8 | 1 | 8.3 | 4 | 6.2 | 3.8 |
| 13 | 2.6 | 3.0 | 1 | 5.7 | 2 | 3.0 | 1.7 |
| 14 | 2.1 | 2.4 | 1 | 3.7 | 3 | 1.5 | 1.4 |
| 15 | 1.6 | 2.4 | 1 | 2.5 | 2 | 1.6 | 1.3 |
| 16 | 15.1 | 17.2 | 1 | 19.4 | 14 | 9.4 | 2.6 |
| 17 | 1.6 | 3.0 | 3 | 4.2 | 2 | 1.8 | 1.8 |

Table II.

DISCUSSION

Use of the monoclonal antibody OKT₃ to treat acute renal allograft rejection was reported in 1981, (Cosimi, et al. 1981).

The key to OKT₃'s efficacy is its antigen specificity, in vitro treatment of human T cells with OKT₃ has been shown to inhibit their effector function (Londergran, 1982).

Although using OKT₃ as a first weapon in treatment of rejection episodes in protocol including prednisone and azothioprine reversed almost all acute renal allograft rejection episodes in randomized comparison with steroid treated rejection. 66% of patients with successfully treated rejection suffered recurrent rejection in the 89-486 day follow up period. Norman, et al have proved in previous studies that anti OKT₃ antibodies developed after OKT₃ therapy in 74-85% of patients with resumption of AZA and Pred alone, the Immunosuppression provided by AZA and P may not be adequate to prevent response to this murine protein or to prevent early recurrent rejection.

Thistlethwait et al studying the use of OKT₃ in first rejection episodes in cadaver renal transplant patients receiving AZA and P, noted recurrent rejection rate in 75% of 16 patients, Similar finding has been recorded by Norman et al, 1985.

In our study including CSA as a basic immunosuppression and reserved use of OKT₃ for the treatment of steroid resistant rejections with follow up period up to 5 months post OKT₃ treatment, 2 patients had developed recurrent rejections 40, 59 days. None of the rejections were early and no grafts were lost due to the few late occurring re-rejection. Our treatment regimen differs from that employed by the ortho-multicenter transplant study group in 3 respects, all of which potentially contribute to the reduced rate of recurrent rejection. First we have overlapped OKT₃ and baseline therapy at end of OKT₃ therapy, second, we have treated only steroid resistant rejections with OKT₃; and third, we have used OKT₃ in combination with baseline treatment regimens that include CSA. The actual contribution of CSA to the Low recurrent rejection rate after treating rejection with OKT₃ probably lies in the fact that it is a more potent immunosuppressant than AZA and causes blunting of the rebound immune competence after cessation of OKT₃ therapy.

Although eight infections has been observed, most of them are trivial and caused no mortality. In the randomized trial of OKT₃ VS. steroid therapy

for acute rejection, infection occurred in 41% of OKT₃ treated patients during the first 45 days after the start of treatment.

In our trial, where the need to treat recurrent rejection is low, the observed infection rate after OKT₃ treatment is also low, despite using an aggressive immunosuppression regimen of CSA, AZA and Prednisone.

Aside from infection, side effects of OKT₃ have been limited to adverse response to the first doses of medication.

One patient was presented with a picture consistent with aseptic meningitis, this symptom complex resolved in 2-3 days whether or not daily doses were stopped. This finding also had been described by Thistlethwait, et al 1987.

CONCLUSION:

Although the follow up period is short, OKT₃ has been shown to be a safe and effective agent for treating acute rejection. Reserving OKT₃ for patients with steroid resistant rejection has been cost effective, and has allowed 62% of rejection episodes encountered to be resolved successfully with methyl prednisone bolus therapy.

OKT₃ treatment after steroid failure has resulted in almost uniform reversal of rejections, low rate of recurrent rejection and a low incidence of infection.

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The material of this work has been collected from Chicago University hospital, U.S.A.

EVALUATION OF BREAST MASSES BY NEW IMAGING MODALITIES BY

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INTRODUCTION

Soft tissue mammography was first applied clinically in the 1930's (Warren, 1930), but it was not until refinements in technique and interpretative criteria in the 60's that X-ray examination of the breast became an established supplement to the physical examination (Egan, 1960). Though physical signs and mammography become standard diagnostic methods for breast lesions diagnosis, additional breast imaging methods continued to be sought including Thermography, Ultrasound, C.T. scanning, heavy particle imaging and NMR.

The present work is confined to mammography, ultrasonography and C.T. scan in 40 patients with palpable breast masses in a trial to evaluate each each technique regarding its relative diagnostic accuracy in the light of pathological findings.

MATERIAL AND METHODS

This study was carried out on 40 Kasr El Aini Hospital patients whose ages ranged between 30 and 60 years. Those whose mammograms revealed a mass 1 cm or larger in diameter were referred for ultrasound examination on the same day of the mammographic examination. C.T. scans were done for 20 patients before and after contrast enhancement.

Mammograms were obtained with «Siemens' Mammomat» diagnostic unit. For each patient, two projections were obtained cranio-caudal and medio-lateral, using either a specific mammographic film with a single coated emulsion layer or an ordinary film in a mammographic cassette (with single back intensifying screen).

Direct contact B scan ultrasound examination was performed using both «Schimadzo and Siemens» Ultrasound machines with 3.5 and 5-MHZ linear and sector transducer. The sonography was performed after physical examination of the breast and

reviewing the mammographic findings. The supine position is optimal for most patients. Large breasts with a laterally located mass are best examined with the patient turned slightly to the contralateral side, because flattening of the breast ensures complete penetration of the breast parenchyma by ultrasound waves. When the mass is small it is positioned between the examiner's fingers and both transverse and longitudinal scans are done.

C.T. examinations were done in a standard whole body scanner (Pfizer 200 FS, 2nd generation) while the patient was lying prone and raising her chest so that both breasts were hanging freely downwards. However, it was more practical to let the patient rest on her elbows and support her shoulders and abdomen on pillows. The table was put in a position that would allow the breast to be in the center of the scanning field. The region of the previously localised lesion was scanned by successive 5 to 6 slices of 10 mm thickness. The same sequence of scans were repeated after I.V. contrast enhancement with 120 ml Urografin 76%.

RESULTS

The ultrasonic and mammographic findings are summarized in table 1. Out of the 40 pathologically proven cases, there were 27 malignant masses; 8 cysts and 5 fibroadenomas. Cysts and fibroadenomas were diagnosed by the combined mammographic-sonographic approach.

Four of the fibroadenomas interpreted by mammography as benign masses, were considered by sonography as 3 solid benign (Fig. 1) and one solid malignant. The remaining case of fibroadenoma interpreted by mammography as suspicious cancer, sonography regarded it as a solid benign lesion (Fig. 2).

Table 1: Mammographic and Sonographic Interpretations in 40 Cases of Breast Lesions

| Pathologic Diagnosis | No. | Mammography | | Sonography | |
|----------------------|-----|---------------|--------|-----------------|--------------|
| | | | Cystic | Solid malignant | Solid benign |
| Carcinomas | 27 | Carcinoma | 22 | — | 20 |
| | | Suspicious Ca | 3 | — | 3 |
| | | Benign | 2 | — | 1 |
| Fibroadenomas | 5 | Benign lumps | 4 | — | 1 |
| Cysts | 8 | Suspicious Ca | 1 | — | 3 |
| | | Benign lumps | 8 | — | 1 |

The 8 cystic cases diagnosed by mammography as benign masses proved by ultrasound to be cysts (Fig. 3).

Regarding malignant cases, mammography diagnosed 22 cases as cancer while by sonography 20 cases were regarded as solid malignant (Fig. 4) and 2 as solid benign masses (Fig. 5).

Three cases were suspicious of malignancy by mammography and were confirmed by ultrasound (Fig. 6).

The remaining two cases were interpreted by mammography as benign lesions, whereas by sonography one was considered as solid benign, while the other as solid malignant.

In 20 patients, it was possible to obtain satisfactory C.T. scans of the breast and to localise the lesions and assess their relation to adjacent structures. The lesions met with in this study included 4 benign and 16 malignant masses (Fig. 7 and 8). Out of the malignant cases, 14 had ill-defined enhancing masses with accompanying axillary lymph nodes and thickened skin. In the other 2 cases, an irregularly enhancing mass (range of 29-104 HU) was detected without any accompanying secondary changes. In the 4 benign lesions, a relatively well-defined faintly enhanced masses (range of 4-51 JU) were seen.

DISCUSSION

In the present study, special stress has been focussed on the criteria used for the interpretation of benign and malignant lesions of the female breast by sonographic and C.T. examination since soft tissue mammography has been extensively discussed in the literature.

The accuracy of the three techniques in making the correct diagnosis and their value in saving the patient an undue invasive interference such as biopsy have been investigated.

SONOGRAPHY

1. Cysts: The ability to definitively diagnose simple cysts has made sonography an indispensable tool in modern-day breast imaging. Thus, cysts have

a characteristic sonographic appearance, being well-circumscribed and echo-free with sharply defined posterior wall (Fig. 3) and posterior enhancement in all cases (Scikles et al., 1987).

In the present series all cysts had the same sonographic criteria as described above and were correctly diagnosed by ultrasound while mammography revealed a benign mass without specification (Cole-Beuglet et al., 1975). Therefore, sonography is valuable in the diagnosis of cystic disease and the need for biopsy is eliminated.

2. Carcinomas: When carcinomas are non-circumscribed and infiltrating they have a typical sonographic appearance. The mass has a jagged border, a weak or absent far wall and contains internal echoes with heterogeneous pattern (Fig. 6). Attenuation of the sonographic beam is often but not invariably, present with malignant dominant masses casting a posterior acoustic shadow in some cases (Mature et al., 1982).

When carcinomas are well-circumscribed, they display a more regular contour on sonography with a weak far wall and homogeneous internal echoes. Also, transmission of sound is diminished to a variable extent but not sufficiently for an acoustic shadow to develop (Fig. 5). These features are shared by fibroadenomas, making sonographic differentiation of malignant and benign solid masses difficult (Gros et al., 1971), (Cole-Beuglet et al., 1983 a & d).

Mammography remains the most sensitive method for the diagnosis of carcinoma. In our series we have 27 pathologically proven carcinomas, 25 cases (92.5%) were correctly diagnosed as malignant or highly suspicious of malignancy by mammography, this percentage is almost the same as that recorded by (Teixidor, et al., 1977), but we have a more accuracy rate than those recorded by (Dodd, 1977; Croll et al., 1982; Walsh et al., 1985) and a lower accuracy rate than (Sickles et al., 1983) who claimed a sensitivity as high 97%.

by sonography only 24 out of the 27 carcinomas

(88.8%) were correctly diagnosed. This percentage is higher than that recorded by (Teixidor, et al., 1977). However, (Guyer et al., 1986) recorded an ultrasound sensitivity for carcinoma of 93% which is higher than our results and this is mainly because they used 7.5 MHZ real time transducer which gives a better resolution and used a special type of gel (Kitecho stand-off) gel to improve the near field detail.

The remaining 3 cases were wrongly diagnosed by ultrasound as solid benign, all these cases were well circumscribed masses, hypoechoic with no surrounding echo halo, or posterior shadowing, making an error of 11.1% which is a higher error than that recorded by (Guyer et al., 1986) which is 7%.

By using the combined mammographic-sonographic approach 26 out of 27 carcinomas were correctly diagnosed raising the diagnostic sensitivity to 96.3%. This was possible because occasionally malignancy can be diagnosed by sonography in the absence of a typical mammographic features as in cases of a dense breast without a definite mass in the X-ray (Croll et al., 1982), also the use of ultrasound in these can help to reduce the biopsy rate (Harper et al., 1980).

3. Solid Benign Masses: Fibroadenomas are important because they are the most common benign breast tumours in women between the ages of 15-35%.

Fibroadenomas display the same sonographic features as circumscribed carcinomas, i.e. a well defined outline, homogenous internal echo pattern which is mainly seen in the large fibroadenoma, the smaller ones show a mixed echo pattern, with some acoustic shadowing (Sickles et al., 1984).

In our series, we have 5 fibroadenomas; 4 out of 5 diagnosed by mammography as benign masses, 3 out of these diagnosed by ultrasound as solid benign and one as solid malignant.

The last one case was suspicious for carcinoma by mammography and benign by sonography (Table 1).

So, 4 cases out of 5 were correctly identified with a sensitivity of 80%.

Sufficient overlap of features exists so that malignancy can not be ruled out by sonogram (Kobyashi et al., 1974).

COMPUTARIZED TOMOGRAPHY

Cysts: In C.T examination the cysts appear homogeneously hypodense with an attenuation value ranging from 10 to 15 HU. They have a thin well-defined wall which may enhance after contrast injection, but the contents of the cyst itself do not enhance (Fig. 7). No skin changes or axillary lymph node enlargement can be detected.

2. Malignant masses: C.T. examination was carried out in 16 malignant cases only, because the amount of new information gained was practically limited and also considering the relatively high exposure dose and expensive cost (Chang et al., 1982).

The C.T. findings include:

(a) Irregular hyperdense area with radiating projections.

(b) Intense contrast enhancement, the Hounsfield numbers of the malignant lesions were higher (range of 29-104 HU) than those of benign lesions (range of 4- 51 HU). However, because of overlapping between the two groups, the reliability of using enhancement as a criterion to differentiate benign from malignant lesions is questioned (James et al., 1983). In the present series, 12 cases showed dense enhancement while the other 4 showed only faint enhancement.

(c) Fine calcifications were usually not recognized as in mammography due to relative thick C.T. slices used in our study because these calcifications are generally only 1-2 mm in diameter. With the resulting volume a 1-2 mm slice thickness some of the calcifications would have become visible (Change et al., 1977).

(d) Skin thickening and enlarged draining lymph nodes, although these signs can be detected clinically.

(e) Pectoral muscle of pleura-pulmonary invasion.

3. Benign lesions: On C.T., the benign lesions were those which exhibited sharp borders, faint contrast enhancement (4-51 HU) and no fine calcifications although it can be easily seen on mammography (Jamaes et al., 1983).

CONCLUSIONS

Combined mammographic and sonographic evaluation of breast masses gives higher accuracy rate than either method alone. Ultrasound can easily differentiate between cystic and solid masses. Also, in cases of dense breasts by mammography, particularly in the presence of clinically palpable lump, ultrasound is very helpful in detecting lesions.

However, differentiation of benign from malignant solid masses cannot be reliably accomplished by sonography. Because of the increase in radiation dose and cost of examination, C.T. should be used only in specific instances, viz.:

1. When good quality mammograms could not be obtained because either the breast is unusually dense on X-ray film or too small or having extensive disease causing technical difficulties in performing mammographic examination.
2. Equivocal mammographic interpretation

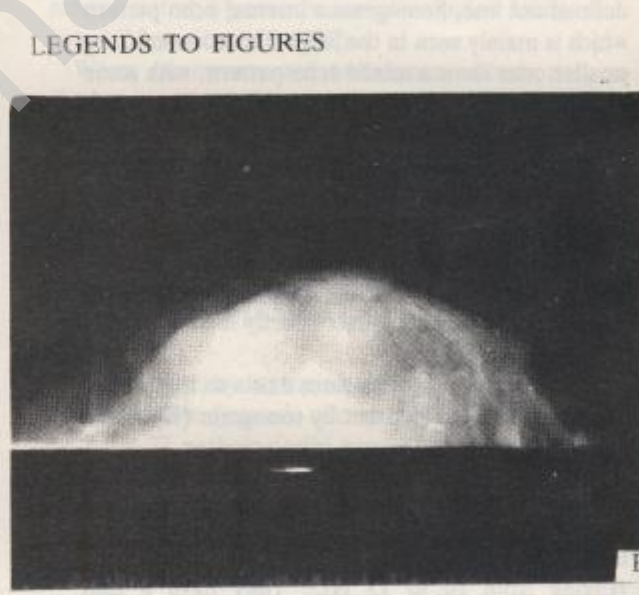
3. Suspected axillary or internal mammary node affection

4. Suspected skin, pectoral muscle or pleural invasion

5. Planning radiotherapy.

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LEGENDS TO FIGURES

Fig. 1: Fibroadenoma:

- (A) Ultrasonogram showing a well defined solid mass with homogeneous internal echoes and no posterior shadowing (solid benign);
- (B) Mammogram of same case showing an oval-shaped lobulated density with smooth contour and radiolucent fatty borders (benign mass).



Fig. 2: Fibroadenoma:

- (A) Ultrasonogram showing a large solid mass with fairly well defined outline, homogeneous echo pattern and edge shadowing but no central posterior shadowing. There is posterior enhancement (solid benign).
- (B) Mammogram of same case showing a dense opaque oval-shaped mass with posterior well-defined border and ill-defined anterior and lower borders (suspicious carcinoma).

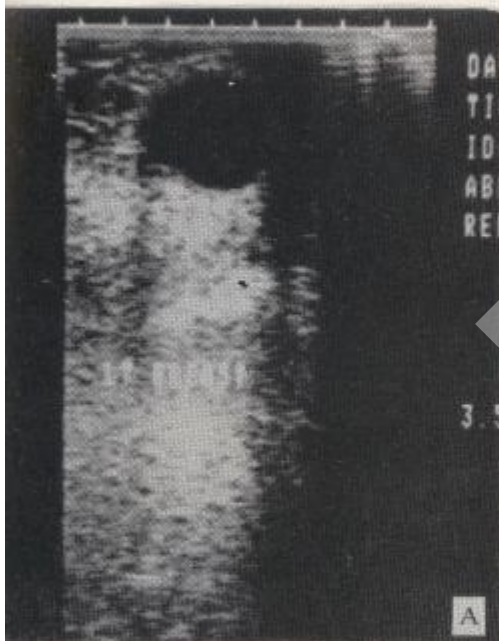
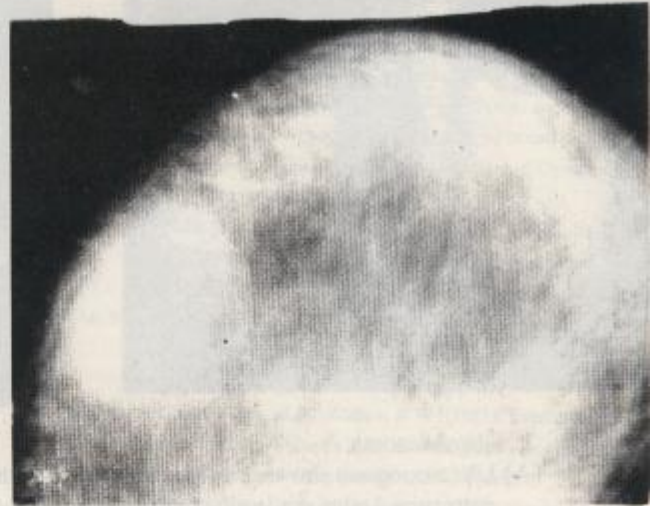


Fig. 3: Cyst:

- (A) Ultrasonogram showing a completely transonic well-defined mass with edge shadowing and posterior enhancement (cyst).
- (B) Mammogram of same case showing a more or less well-defined dense opaque rounded mass in the subareolar region. No calcification or skin thickening (benign mass).



A



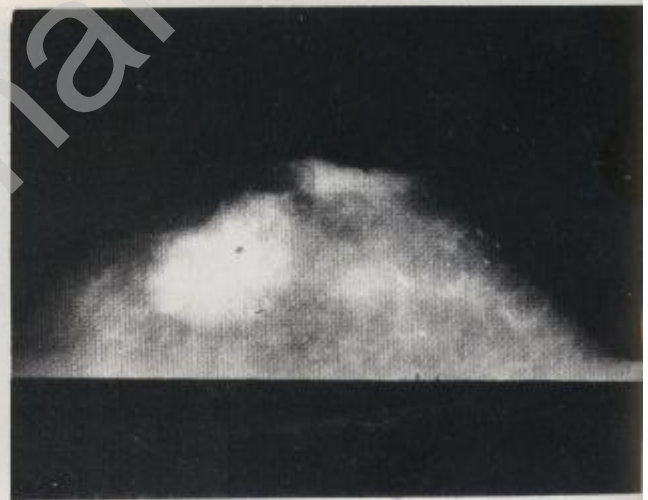
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Fig. 4: Carcinoma:

- (A) Ultrasonogram showing a solid irregular mass with mixed echo pattern but no posterior shadowing (solid malignant)
- (B) Mammogram of same case showing faint opaque mass, hazy outline, dense breast parenchyma and thickened skin (carcinoma).



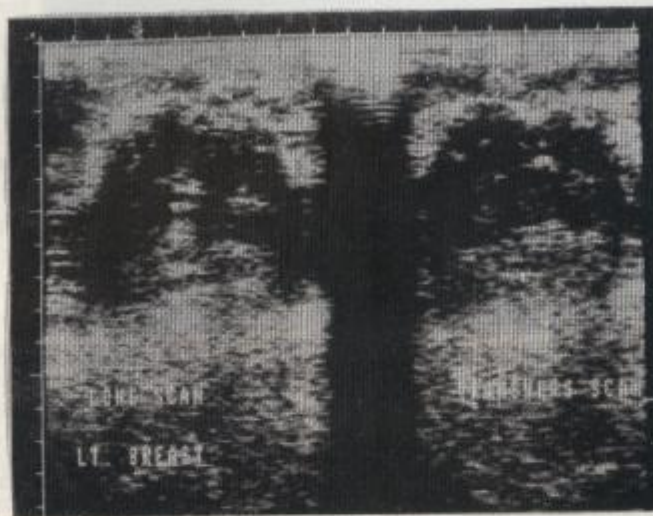
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Fig. 5: Carcinoma:

- (A) Ultrasonogram showing a well-defined solid mass with homogeneous internal echopattern and no posterior shadowing (solid benign).



A



B

Fig. 6: Carcinoma:

- (A) Ultrasonogram revealed a large irregular solid mass with incomplete surrounding echo halo, illdefined posterior margin with posterior shadowing and mixed echo pattern (carcinoma).
- (B) Mammogram of same case showing a dense breast with no definite mass (carcinoma).

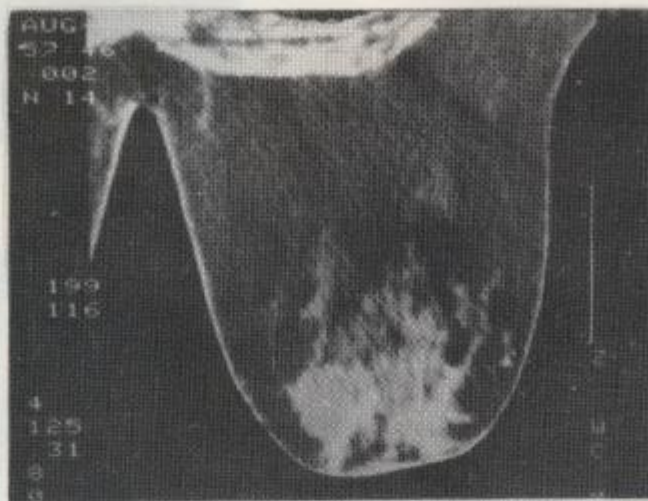


Fig. 7: Cyst:
C.T. examination showing well circumscribed low attenuation area within the breast (15 HU) with wall enhancement but no enhancement of the content.

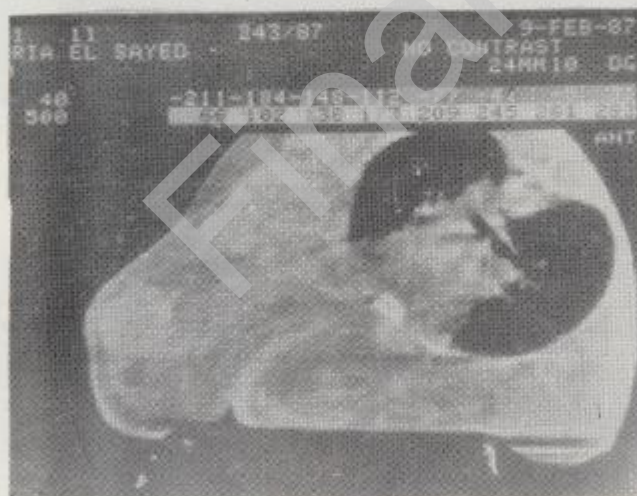


Fig. 8: Carcinoma:
C.T. examination showing dense irregular irregular mass with axillary lymph nodes and thickened skin.

Meet the experienced

A female patient presented with painless cholestatic jaundice of three months duration. There was no weight loss and no pruritis. Ultrasound showed dilatation of the intrahepatic biliary tree and a stone in the gallbladder. ERCP revealed an obstruction high up in the porta hepatis which was compatible with cholangio- carcinoma —

The patient was explored through a kocher subcostal incision extended to the left across the midline dividing the left rectus abdominis. Exploration revealed a collapsed C.B.D. and a hard mass which was better defined after removing the gallbladder. The mass was found in the termination of the right hepatic duct and encroaching on the confluence. A length of right hepatic duct was present between the tumour and the liver and was dilated because of the distal obstruction. The left hepatic duct was exposed within the liver through the umbilical fissure by following the ligamentum teres. A Roux-y jejunal loop was fashioned and a double anastomosis performed. Intrahepatic cholangiojejunostomy (between the Roux loop and the left hepatic duct), and extrahepatic cholan-

giojejunostomy (between the Roux loop and the right hepatic duct at the porta hepatis proximal to the tumour).

The patient recovered after a transient bile leak which lasted 10 days. She was seen 3 months after the operation and is doing well.

Management of cholangiocarcinoma involving the upper third of the biliary tree (down to the cystic duct- common hepatic duct junction) is difficult. Percutaneous intubation exposes the patient to attacks of colangitis and the burden of changing the Terblanche tube when necessary. Surgery with bypass of the tumour is satisfactory because these patients do not die of metastatic disease, the cause of death is usually cirrhosis with portal hypertension and liver failure. Excisional surgery when feasible offers a prospect of cure but it involves a hepatectomy with its attendant mortality if done in non-specialist centres. Peroperative intubation through the tumour is the least effective method of palliation but it has the advantage of being relatively safe.

M.H.Rateb M.D.

ANNOUNCEMENT

The Egyptian Society of Surgeons

The 6th Annual meeting

The 6th annual meeting will be held between the 17th and the 19th of February 1988. The main theme is: Surgery in the tropics. Free papers in different surgical domains are cordially invited and should be submitted to Prof. M. Shawki Kamal Dar El Hekma, 42 Kasr El Eini St., Cairo, not later than the 15th of December 1987.