South African Medical Journal : Suid-Afrikaanse Tydskrif vir Geneeskunde

Cape Town, 24 September 1960 Volume 34 No. 39 Deel 34 Kaapstad, 24 September 1960

INGUINAL HERNIOTOMY WITH LOCAL ANAESTHESIA AND WIRE REPAIR

S. V. HUMPHRIES, M.A., M.R.C.S., L.R.C.P., *Lilongwe African Hospital, Lilongwe, Nyasaland*

The following is a description of the method used for more than 150 inguinal herniotomies performed in the Transvaal, Sierra Leone, Ghana, Central Australia, the Central Pacific and Nyasaland, between 1948 and 1960. Most of the patients were Africans, but the series includes many Pacific Islanders and White and Asiatic patients. About one-third of the hernias treated were very large, and about half of these were irreducible by taxis. Twelve were strangulated, and resection of gut was necessary in 2. Local anaesthesia alone was used for all but 1 (to be described below). There were no deaths in the series.

Local anaesthesia is advocated for all inguinal hernias, except those in which resection of gut is necessary, for the following reasons: The incidence of postoperative chest complications is reduced; unlimited time is allowed for careful dissection and repair (the anaesthetic can be renewed as often as necessary); the technique of administration of local anaesthesia for hernia is comparatively easy compared with that in other operations possible under local anaesthesia, while the anaesthesia provided is effective; and the patient can facilitate identification of the sac by coughing when directed to do so.

Repair with stainless steel wire is recommended because, however wasted the muscle layers may be in the area affected and however large the hernia, the gap can be bridged from healthy muscle above to Poupart's ligament below by a sturdy wire 'fence' through which the danger of penetration is slight. This is of particular importance in sliding hernias which have no peritoneal sac to prevent their future descent. I have known none of the hernias to recur. Though this may not be significant, as some of the patients may have required subsequent operations by other surgeons, it does at least suggest that recurrence after wire repair is exceptional. Efforts have been made to keep in touch with the hospitals at which the patients were treated, especially in attempting to follow up those operated upon for very large hernias.

ANAESTHESIA AND OPERATIVE TECHNIQUE

Requirements

A 10 ml. syringe and long narrow needles, 8 - 10 cm. × 0·8 mm. The local anaesthetic used may be procaine 1%, lignocaine 0·25 - 0·5%, or any other solution of equivalent strength. If the anaesthetic does not already contain a vasoconstrictor, 0·5 ml. of adrenalin is added to 200 ml. of solution. Standard gauge 33 - 34 stainless steel wire is recommended, but any gauge near this is satisfactory. Two assistants are a great help while working with wire, as both hands must be used to hold the wire and stop it from getting kinked (assistants are apt to disapprove of wire!).

Premedication

An enema is given the previous night, and water only may be taken by mouth on the morning before the operation. Three gr. of phenobarbitone or an equivalent dose of another barbiturate are given orally 2 hours before the operation, and 1½ gr. phenobarbitone, with ¼ gr. omnopon and $^1/_{150}$ gr. scopolamine or 100 mg. pethidine, 1 hour before the operation. The object of giving a barbiturate is to neutralize the convulsive effect of local anaesthetics. Sedation is advisable, for, although the operation under local anaesthesia is almost completely painless, the infiltration of local anaesthetic through tough skin, with a needle which sometimes proves unexpectedly blunt, requires so much pressure that it is apt to alarm any but the most stoical of patients.

Technique of Local Anaesthesia

Wheals are raised with a fine hypodermic needle at 3 points: (1) 1 finger-breadth medial to the anterior superior iliac spine; (2) over the external abdominal ring; and (3) over the fossa ovalis. These 3 wheals are joined by subcutaneous infiltration, injecting about 30 ml. of solution.

From point (1) the needle is directed: subcutaneously, almost to the umbilicus, injecting 10 ml. in this plane; beneath the external oblique, also injecting 10 ml.; and beneath the internal oblique, also 10 ml.

The needle is then directed from point (1) directly backwards down to bone, injecting 10 ml. as the needle moves, then laterally to the anterior superior iliac spine, where 5 ml. are deposited.

From point (2) the scrotum and tunica vaginalis are infiltrated with 10 - 20 ml., and the inguinal canal with 20 ml. or more. Further injections can be given if necessary during the operation on large hernias, especially round the neck of the sac. Procaine hydrochloride 1% usually lasts barely 1 hour, lignocaine (0·25 - 0·5%) 2 hours, amethocaine hydrochloride (0·05 - 0·1%) and cinchocaine hydrochloride (0·05 - 0·1%) 3 hours. The weaker strengths mentioned are usually sufficient. When using lignocaine one can as a rule proceed at once with the operation; with the others it is necessary to wait 5 - 10 minutes.

This wide infiltration may not be necessary for small hernias, but I use it as a routine, for if the abdominal musculature is poor one can dissect the superficial structures extensively until sound muscle is reached. Gentleness should be observed when freeing the sac at the internal ring as pain may be felt if traction is applied to the peritoneum. There may be momentary pain when the neck of the sac is ligatured, and the patient should be warned about it if he is not asleep, and reassured that it will not persist.

Technique of Wire Repair

After removing the sac and isolating the cord, the conjoined tendon and external oblique are together connected with a continuous wire 'darn' to the pubic bone, Gimbernat's ligament, Cooper's ligament, and the recurved edge of Poupart's ligament. No tissue plane must be drawn out of alignment — the tissues are darned, not cobbled — the cord being lifted up with a loop of gauze and held out of the way. First a bite of the periosteum of the pubic bone is taken and the needle is then carried upwards and laterally to the conjoined tendon and external oblique, through which it is passed, then back to Gimbernat's ligament, and so on outwards to the internal ring. The strands of wire are placed about ¼ cm. apart. Sufficient room is left for the cord, and a return darn is then made which crosses the first layer roughly at a right angle. The cord is allowed to lie on top of the wire layers, after the two ends of wire have been joined by a reef knot near the pubis. A pair of fine artery forceps is placed next to the knot, the ends of wire are cut off flush with the artery forceps and then twisted with the forceps to bury them to prevent them from irritating the skin.

I used to suture only the conjoined tendon to the ligaments below and behind the cord and then secure the external oblique aponeurosis to the anterior edge of Poupart's ligament

in front of the cord, but have given up doing this as there was not sufficient room for the cord. In dealing with very large hernias in old people I usually persuade the patient to consent to orchidectomy on the affected side, as a stronger repair is possible when the inguinal canal can be completely closed. Patients sometimes give permission during an operation under local anaesthesia if one has forgotten to discuss the matter with them beforehand.

Postoperative Treatment

Water and glucose only are allowed until the bowels have opened. An injection of vitamin B_1, 250 mg. daily, is administered for 4 days and pethidine, 100 mg., may be given when necessary. An enema is administered as soon as flatus has been passed or borborygmi heard, then the patient may start having a light diet. Intravenous fluids and an antibiotic are advisable after operations on strangulated hernias. The patient is kept in bed for 7 - 10 days, and the stitches are removed after 7 - 14 days. He is discharged as soon as the wound has healed. After repairing very large hernias I try to persuade the patient to remain lying flat for 3 weeks, and to perform exercises to strengthen the abdominal muscles from the 14th day onwards.

Complications

The most common complications have been retention of urine and oedema of the scrotum.

Retention of urine is treated with amphetamine sulphate 5 - 10 mg., which diminishes congestion of the posterior urethra, followed in half an hour by carbachol 0·25 - 0·5 mg. subcutaneously. Catheterization is very seldom necessary.

Oedema of the scrotum is prevented by avoiding constriction of the cord at operation, and by elevating the scrotum afterwards. I know of no satisfactory method of accomplishing this. Usually a piece of strapping from one thigh to the other supports the scrotum when the patient leaves the theatre, but he soon manages to get his scrotum underneath the strapping. A sandbag placed under the scrotum seldom remains long in position. I have even tried slinging the scrotum up by strapping, cord, and pulley from a Balkan beam with a weight attached to the cord. But the effective elevation of a very large, empty scrotum remains for me an insoluble problem in the treatment of hernia! Fortunately most patients recover without developing oedema of the scrotum.

CASE REPORTS

The 5 most interesting cases in this series are described shortly below.

Case 1

An emaciated, anaemic African, aged about 50 years, was admitted to Sierra Leone Selection Trust Hospital, Yengema, Sierra Leone, in 1952, with a massive strangulated hernia. The operation was lengthy and difficult and a wire repair was done. He developed paralytic ileus postoperatively, and recovered only after a stormy convalescence. He was readmitted 1 year later with acute obstruction, and died before the theatre could be prepared. There was no recurrence of hernia. A postmortem examination was not performed, but the cause of death was thought to be obstruction, probably due to a band from the previously strangulated gut.

Case 2

An African, aged about 40 years, with a very large hernia, was admitted to the same hospital as the first patient on 22 December 1953. The small intestine and mesentery were adherent to the sac and were accidentally damaged. This necessitated resection of 3 inches of gut. The operation was completed under local anaesthesia, but this was not entirely satisfactory. However, the patient recovered completely.

Case 3

A Nauruan, aged about 45 years, was operated on for what was thought to be elephantiasis of the scrotum, at the Nauru Administration Hospital, Central Pacific, on 5 June 1958. There was no impulse on coughing, and the swelling, which had been present since childhood, seemed much too big for a hernia. The scrotal contents were found to consist of almost the whole of the transverse colon and the greater omentum. Considerable enlargement of the incision was necessary before the gut could be returned to the abdomen after excision of most of the omentum. The right testis was removed. The patient developed paralytic ileus, but recovered and returned to work. On 6 October 1959, when I last heard of him, he was well and continuing with his work as a bus conductor. During this operation the local anaesthetic was renewed after 2 hours, as the operation lasted 4 hours, but there was no complaint of pain at any time during the entire procedure.

Case 4

On 6 November 1959, an African, aged about 30 years, was operated on for an inguinal hernia which had been strangulated for 4 days. General anaesthesia was necessary for the resection of 8 feet of gangrenous small intestine, because traction on the mesentery caused severe pain under local anaesthesia. The patient made an uninterrupted recovery.

Case 5

On 31 March 1960, a White patient, aged 60 years, was operated on at Lilongwe European Hospital. He had a large right inguinal swelling, present for more than 30 years, and a recurrent left inguinal hernia. On the right side 2 hernias were found. The larger was indirect and the smaller direct, while on the left side a sliding hernia was found; this contained colon. The abdominal muscles low down on the right side had become too thinned out to be used for repair, but the fascia was dissected upwards for 2 or 3 inches to expose well-developed muscle from which the wire darn was carried down to the recurved edge of Poupart's ligament. The operations on both sides were performed with local anaesthesia. The entire procedure took 4½ hours, but the patient at no time made the slightest complaint. The patient was kept lying flat for 3 weeks, exercises to strengthen the abdominal muscles being started after 2 weeks. After a period of convalescence he returned to work.

SUMMARY

1. A method for repairing more than 150 inguinal hernias under local anaesthesia with stainless steel wire is described, including the pre- and postoperative treatment.

2. The reasons for using this method are given.

3. The most common complications encountered are dealt with.

4. Reports of 5 cases are included.

I wish to thank Mr. A. L. Abel, who demonstrated to me the method of employing stainless steel wire for the repair of an inguinal hernia in 1948, and my many skilled and unskilled assistants for holding the wire during these sometimes 'marathon' operations in various parts of the globe.