INTERINNOMINO-ABDOMINAL OPERATION

REPORT OF A CASE SUBSEQUENTLY FITTED WITH A PROSTHESIS

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In recent years there has been a considerable increase in the number of patients submitted to this formidable operative procedure. To Girard goes the credit for the first successful amputation of this type in 1895, although Bilroth had performed this operation six years previously (in 1891, according to some authors). At least 175 cases have now been reported in the literature. Until 1935 the operative mortality in 79 patients was about 60% (Gordon-Taylor and Wiles, 1935). Since the latter workers' authoritative communication the operative mortality has been reduced to less than 14%. This no doubt reflects the added facilities for blood transfusion.

In the great majority of cases this amputation has been used in patients with malignant neoplasms affecting the root of the lower limb, in which disarticulation at the hip-joint would be inadequate. The remainder have been carried out for chronic infective processes, tuberculous or osteomyelitic, in the region of the hip-joint. These diseases would seldom be indications for this formidable operation to-day. So far as can be ascertained, this is the first Australasian case to be published, but McCaw of Auckland was successful in his case (Gordon-Taylor, 1940).

Case Report

The patient, a female aged 19, was admitted to Palmerston North Hospital on Dec. 3, 1945, complaining of pain in the left hip and groin of two years' duration. During the preceding months she had lost a considerable amount of weight. Owing to the severity of the pain she was unable to walk and her sleep was much disturbed.

On examination she was thin and pale, with obvious muscular wasting. The left thigh was flexed and adducted, and pronounced muscle spasm was present. Movements in all directions were considerably limited by this and by the pain. There was no tenderness. X-ray examination of the left hip region and the chest revealed no lesion. A provisional diagnosis of tuberculous disease of the hip-joint was made and the appropriate treatment instituted.

The patient continued to lose weight. In March, 1946, a lump the size of a walnut was palpable in the upper part of Scarpa's triangle. Biopsy examination of this proved it to be a fibrosarcomatous tumour of indefinite origin. X-ray examination still showed no lesion of the hip-joint and environs. The patient's physical condition continued to deteriorate rapidly and she exhibited a considerable degree of malignant cachexia.

Towards the end of May her condition appeared to have improved. The tumour in her abductor region had grown slowly. In the left buttock there was a prominent tumour mass accentuated by the wasting of the gluteal muscles. Ignorant of her hopeless condition, she had shown an excellent mental attitude throughout.

As it was considered that this type of neoplasm is relatively insensitive to x-ray therapy, a hind-quarter amputation was now considered. No invasion of the pelvis was evident in an examination per vaginam under anaesthesia. There was now x-ray evidence of involvement by the tumour of the neck and upper part of the shaft of the left femur. No pelvic invasion or pulmonary metastases were demonstrated. The red cell count was 3,440,000 per c.mm. and haemoglobin 70%. A pint (568 ml.) of blood was transfused on June 12 and again two days later. On the day before operation the Hb was 92% and the blood pressure 110/70. Her weight was 5 st. (31.75 kg.).

Operation

On June 18 a left interinnomino-abdominal amputation was performed. Twelve ml. of a 1 in 1,500 solution of nupercaine (cinchocaine hydrochloride) was administered intrathecally. This was supplemented by light ether anaesthesia. A cannula was inserted and blood transfusion was started soon after the anterior skin incision was made. The operative technique followed closely that described by Gordon-Taylor and Wiles (1935).

During the first 40 minutes the patient received 1,000 ml. of blood, and her condition gave rise to no anxiety. At this stage, however, her pulse quickened and became weak. The systolic blood pressure fell from 90 to 60 mm. Hg. and was obtainable only by palpation. "Neosynephrin" was administered intramuscularly and the rate of the blood drip was increased. Within 10 to 15 minutes her condition steadily improved. On leaving the theatre the patient's pulse was of fair volume and the rate 120 a minute. She had received a total of 1,500 ml. of blood during the operation. The operative time was 70 minutes.

Post-operative Treatment

One hour after her return to the ward she was fully roused and her condition had greatly improved. A further transfusion of 900 ml. of blood was given by slow drip. This was followed by intravenous glucose and saline, which were continued for 72 hours post-operatively owing to the patient's poor appetite.

Catheterization was performed eight-hourly for the first three days. The two drains were shortened daily and finally removed in six days. On the seventh day the patient was given a small enema, which was followed by a good faecal result. Subsequently her bowels moved normally.

On June 26 all sutures were removed, and, except for a small area at the site of one of the drains, the wound was soundly healed. The left labium of her vulva was oedematous and remained so for several weeks. Owing to the advanced degree of cachexia which was present for some weeks before operation the patient's limb muscles were lacking considerably in tone. Physiotherapy was instituted to overcome this.

One month later her physical condition had improved greatly. Her weight was now 4 st. 12 lb. (30.84 kg.): she had gained 14 lb. (6.35 kg.) since the operation. The tone of her abdominal musculature was good. She was now using crutches.

The patient continued to gain weight after her discharge from hospital, and 15 months from the date of her operation she weighed 7 st. (44.45 kg.) without clothes or prosthesis. X-ray examination of her pelvis and chest revealed no evidence of recurrence or metastases. There has been no complaint of a phantom limb.

Pathology

Dissection of the tumour following removal revealed two large masses and a small one occupying the whole of Scarpa's triangle (Fig. 1). A fourth large mass was present in the gluteal region.

Pathological Report (Dr. T. H. Pullar).—"On cutting up the specimen widespread invasion of the muscles around the hip-joint is found. . . . The growth seems to invade the capsule of the hip-joint and the periosteum in this region. It has involved the obturator membrane, but has not completely traversed the fibres of the obturator internus muscle, so that no growth can be seen on the pelvic aspect of the innominate bone. . . . The neck and head of the femur are composed of bone which is much

FIG. 1.—The specimen after dissection of the anterior masses.

easier to cut than normal cancellous bone, though no macroscopic invasion of bone by the tumour can be seen. Sections from the head of the femur show no neoplastic invasion. Sections from the main masses of growth show the same structure as in the former biopsy—a spindle-celled fibrosarcoma of slow-growing type. I think now that this fibrosarcoma is of periosteal origin. . . . Apparently the growth has been completely removed."

The Prosthesis

Several authors express the opinion that no satisfactory prosthesis has been devised for these amputations (Sugarbaker and Ackerman, 1945; Hill and Todd, 1946; Pack *et al.*, 1947). No case has been recorded in which a prosthesis has been fitted,

FIG. 2.—X ray showing the site of section of the ilium.

although Gordon-Taylor and Patey (1946) mention that Harris and Laird's patient is walking on a tilting-table prosthesis. It has been suggested that as much of the ilium as possible should be saved to serve as a supporting shelf. In the case here

FIG. 3.—Photograph of the patient with her prosthesis 15 months after operation.

FIG. 4.—Photograph of the lateral aspect of the prosthesis.

recorded there remained only a small portion of ilium (Fig. 2), which was well covered with muscle. Six months after operation arrangements were made with Mr. J. K. Elliott, visiting orthopaedic surgeon to the Wellington and Palmerston North Hospitals, to have a prosthesis (Figs. 3 and 4) constructed at the Disabled Servicemen's Rehabilitation Centre, Wellington. In May, 1947, the patient had full control of her prosthesis, and

was walking well with the aid of a stick, with only a slight limp. The tilt of her pelvis towards the side of the amputation was scarcely noticeable.

At the time of writing this patient is very well, with no x-ray signs of metastases, and is enjoying an active and useful business career.

Discussion

The poor physique of this patient, largely the result of malignant cachexia, doubtless rendered the operative procedure less difficult technically than one is led to expect from the various accounts. This same factor, however, added considerably to the operative risk. In an operation of this magnitude the prevention of surgical shock is of profound importance. Preventive measures undertaken were as follows: (1) Gentle but deliberate handling of all tissues. (2) The replacement of the blood loss by adequate transfusion. The loss of plasma is associated with surgical shock, which inevitably occurs to some extent. Whole blood loss was reduced to a minimum by careful haemostasis. Morton (1942) suggests elevation of the limb following ligation of the external iliac artery to drain the contained blood. (3) Spinal analgesia and infiltration of the large nerves with procaine hydrochloride before section to prevent the passage of harmful impulses from traumatized tissues.

Gordon-Taylor and Wiles (1935) emphasize the importance of these measures, but Morton (1942) and other surgeons, both British and American, have used general anaesthesia alone with good results. Sugarbaker and Ackerman (1945) employed continuous spinal analgesia with thiopentone.

Ample assistance is of the utmost importance in a case of this kind. The surgeon in the present case acknowledges gratefully the skilled assistance of Mr. J. H. North as well as that of Dr. C. K. Swallow and Dr. J. A. Baird, who had charge of the transfusion arrangements during and after the operation. We are also indebted to the medical superintendent of the Palmerston North Hospital for permission to publish this report.

REFERENCES

- Ghormley, R. K., Henderson, M. S., and Lipscomb, P. R. (1944). *Proc. Mayo Clin.*, **19**, 193.
 Gordon-Taylor, G. (1940). *Brit. J. Surg.*, **27**, 643.
 — and Patey, D. H. (1946). *Ibid.*, **34**, 61.
 — and Wiles, P. (1935). *Ibid.*, **22**, 671.
 Hill, I. M., and Todd, I. P. (1946). *Ibid.*, **33**, 277.
 King, D., and Steelquist, J. (1943). *J. Bone Jt Surg.*, **25**, 351.
 Morton, John J. (1942). *Ann. Surg.*, **115**, 628.
 Pack, G. T., Ehrlich, H. E., and Gentil, F. de C. (1947). *Surg. Gynec. Obstet.*, **84**, 1105.
 Sugarbaker, E. D., and Ackerman, L. V. (1945). *Ibid.*, **81**, 36.

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