A METHOD OF EXCISION AND PRIMARY CLOSURE OF PILONIDAL CYSTS AND SINUSES

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IT is the purpose of this paper to present a method of excision and primary closure of pilonidal cysts and sinuses. This method was used successfully by the author in 20 consecutive cases at Christie St. Hospital between January, 1946 and January, 1947. Its features are: (1) a good functional and æsthetic result; (2) hospitalization period of 10 days; (3) the simplicity of operative technique; (4) no dressing care; (5) low recurrence rate.

The problem of pilonidal cysts and sinuses is an annoying and baffling one. According to Holman, it accounted for approximately 360,000 sick days in the U.S. Navy during 1942 and 1943. The results of operation are discouraging. Failures from operation average 20 to 25% in various reported series. Recurrences have been known to occur up to 5 years after operation; but the majority appear within the first year.

The technique used was one of radical excision and primary closure with drainage by means of a small Penrose drain for 24 hours through a separate stab wound. Penicillin and sulfathiazole were given systemically prior to and following operation, and dusted locally in the operative wound. Most surgeons now agree that open pack methods require weeks and even months for healing to occur, and a wide, delicate scar, adherent to the sacrum, which breaks down under the repeated trauma of civilian life, is the best that can be achieved.

Different methods of excision, different means of closure and different dressings were tried in the first 10 cases until finally the procedure which will be outlined was found best and used for the last 10 cases. The principles of radical excision, primary closure and drainage however, were carried out in all the cases.

Diagnosis.—The diagnosis of this condition is usually simple. Any cyst, sinus or inflammatory lesion in the region of the sacrum or coccyx is evidence of pilonidal disease until proved otherwise. Fistula-in-ano may be confused with this condition but usually can be ruled out by proctoscopic examination.

Etiology.—The etiology is still uncertain. It may be congenital, due to improper fusion of the midline ectoderm, or due to persistence of the coccygeal vestiges of the neural canal. It may be acquired. Repeated trauma may excite a pre-existing condition. Some observers feel this is an acquired infective lesion due to ingrown hairs. The fact that the disease is present, chiefly in male service personnel would suggest that trauma plays a part.

Pathology.—Pilonidal cysts are usually in the midline; however, the sinus tracts may extend laterally into the buttocks for varying distances. The tracts may extend inferiorly as far as the anus and are usually limited anteriorly by the fascia of the sacrum and coccyx. Some sinus tracts are said to be connected with the neural canal, but this condition was not noted in this series.

The pathological report of specimens at operation invariably consisted of a cyst-like cavity with sinus formation. The cyst was usually lined by stratified squamous epithelium with varying degrees of ulceration and replacement by granulation tissue. In all cases, chronic inflammatory tissue was present, and in 20% of the cases there was frank suppuration. In the recurrent cases, ulceration, suppuration and granulation tissue were present but no evidence of epithelial tissue was found.

Incidence.—This is primarily a disease of the young adult male. The ratio of males to females is about 6 to 1. All the patients in this series were males, ranging in age from 20 to 37 years with an average age of 25 years.

Symptoms and signs. — The most common symptoms are a mass and discharge at the base of the spine. The usual story is that of repeated attacks of a painful swelling at the base of the spine, which finally discharges, relieving the pain. The discharge may persist, but usually stops, only to return at a later date. Symptoms in this series varied from 2 weeks to 20 years, with an average duration of 2½ years.

Swellings of varying degrees and numbers were present in all cases and a definite sinus was evident in all but 2 cases. Two cases had been operated on for correction of this condition previously; the recurrence occurred in one case in 5 months, the other in 7 months. Another 3 cases had incision and drainage performed before admission to hospital. Seventy per cent of the cases had a purulent discharge from one or more sinuses at the time of ad-

mission, and 60% were operated on with a persistent purulent discharge.

The cultures of the discharging sinuses revealed the following organisms in order of frequency: (1) *Staphylococcus saprophyticus.* (2) *Non-hæmolytic streptococcus.* (3) *Staphylococcus aureus.* (4) *Bacillus coli.* (5) Diphtheroid bacillus. A few cases had 3 of the above organisms present.

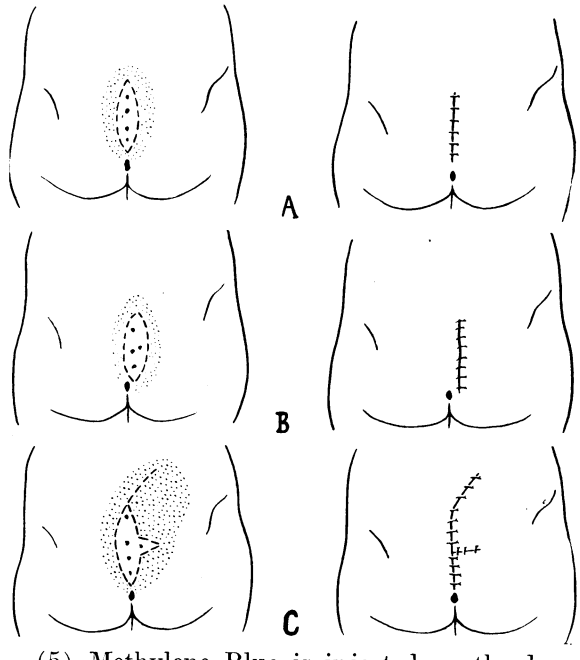
Preoperative preparation.—Ideally, operation is carried out on these cases in a quiescent state. However, in 12 (or 60% of this series) a moderate degree of discharge was present at the time of operation. These cases presented a history with little or no freedom from discharge, and in none of these was the condition considered an acute inflammatory one.

In 3 cases acute abscesses were incised prior to radical procedures, and the acuteness of the inflammation allowed to subside with the help of chemo-therapy, penicillin and sitz baths before excision and closure was carried out. Incisions of abscesses were vertical and as close to the midline as possible, making subsequent excision more easily done.

When a patient was considered ready for operation, the following procedure was carried out: (1) A laxative was given two nights prior to operation and enemas until clear given the evening before operation. (2) Fluids, rich in carbohydrates, were given the day before operation. (3) Penicillin, 20,000 units q.3 h. intramuscularly, was begun 24 hours prior to operation and continued until the sutures were removed. (4) If *B. coli* or other penicillin-resistant organisms were present in the discharge from the sinus, sulfathiazole therapy was carried out as well as the penicillin therapy.

Operation.—(1) Spinal anæsthesia is used if no contraindication is present and the patient is placed in the prone jack-knife position. (2) The operative area is prepared with cetavlon, which, unlike iodine, alcohol or ether, is a non-irritant to the rectal mucosa and scrotum. (3) If any sinuses are present they are probed for extent and the area is palpated for induration.

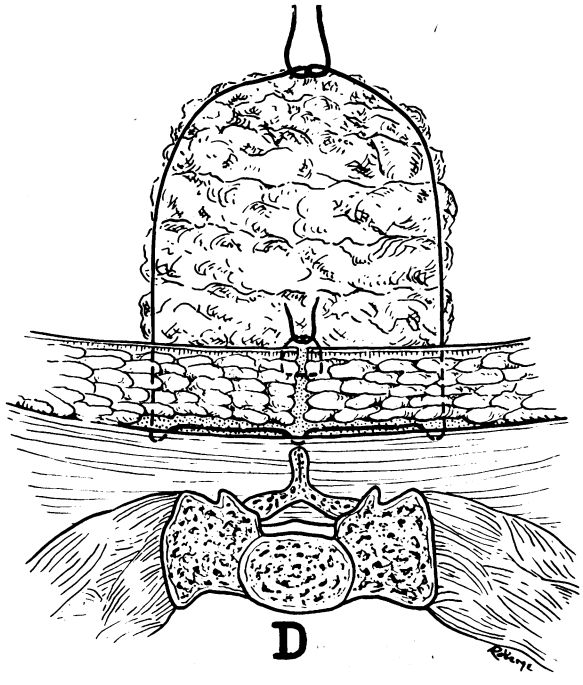
(4) Using Bonney's Blue, the affected area is mapped out by an elliptical skin marking which represents the line of skin incision. The line of incision is at least half an inch beyond the outer limit of induration or sinus tract. An ellipse of skin whose greatest transverse diameter does not exceed 4″ can be removed, and the defect closed without difficulty (see Fig. A). If the disease extends for 2″ to one side of the midline and only ½″ to the other, then the centre of the elliptical incision and the resultant suture line is to one side of the midline (see Fig. B). While preferable, it is not absolutely essential to have the centre of the incision in the midline. If the narrow sinus tract extends into the buttock, in addition to the elliptical incision, a "V"-shaped resection of the sinus tract is carried out and the defect closed without tension by enlarging the incision upwards and curving it to the side of the defect. Wide undermining and shifting of the skin flap is then carried out (see Fig. C). By using these procedures on 4 cases, large buttock rotation flaps or lateral relaxing incisions were found to be unnecessary.



(5) Methylene Blue is injected gently down any patent sinus tracts. (6) The open sinus tracts are cauterized with 60% silver nitrate solution and the operative area is again prepared with cetavlon. (7) An incision is made along the elliptical skin marking. The blade of the knife is kept at right angles to the tissue, and a careful watch is kept for evidence of dye or granulation tissue. If any is encountered, the incision is enlarged, using a new scalpel. The incision is carried down through skin and subcutaneous tissue to the fascia overlying the sacrum and gluteal muscles. An elliptical block of tissue is removed. (8) The skin edges are undermined in the layer between the fascia overlying the gluteal muscles and the subcutaneous tissue for a distance of 2″ or so, in

order that the skin edges may come together without tension.

(9) Hæmostasis is made complete by means of the electrocautery. An occasional large, perforating vessel is ligated with "000" plain catgut. The cauterization of bleeders is a time-saver, renders hæmostasis more complete and does away with foreign body suture material in the wound. (10) No. 32 interrupted stainless steel retention sutures are situated about 1" apart, and placed as follows: The suture passes through skin and subcutaneous tissue at the outer limit of the undermining which is usually about 2" from the midline. A small bite is taken in the fascia of the gluteal muscles and another bite in the fascia overlying the sacrum and through the corresponding situation on the other side. Five to six of these sutures are usually used (see Fig. D).



(11) A stab wound is made about 1" above the upper limit of the incision and a narrow Penrose drain is passed through this incision down to the resected area. (12) The wound is well irrigated with saline solution and dusted with a small amount of penicillin and sulfathiazole powder. (13) The skin is closed, using interrupted mattress sutures of "C" silk. Only if perfect apposition of the skin edges is obtained can the stitches be removed on the 8th postoperative day. (14) The incision is painted with Whitehead's varnish to prevent infection of the suture line from the outside and to keep it dry. (15) A large roll of flat gauze about 4 to 5 inches in diameter is placed over the suture line and the steel retention sutures tied over this gauze with pressure firm enough to prevent the collection of serum but not enough to cause tissue necrosis. Additional pieces of fluff gauze and abdominal pads are used to apply firm, even pressure over the buttocks, and the Penrose drain is made long enough to be easily reached near the upper end of the dressing. The dressings are kept in place by elastoplast. Tincture of benzoin co. is applied to the skin to avoid skin irritation.

Review of operation.—The main factors about the operation are as follows: (1) Radical block excision of skin and infected tissue. (2) Wide undermining of skin and subcutaneous tissue to prevent tension on suture line. (3) Absolute hæmostasis by the use of electrocautery instead of catgut, preventing foreign body tissue reaction. (4) Drainage of serum, which is produced postoperatively in the so-called dead space, by means of a small Penrose drain for 24 hours through a separate stab incision. (5) Accurate approximation of skin edges, allowing sutures to be removed on the 8th day postoperatively. (6) Full thickness of skin and subcutaneous tissue over the sacrum, providing a pliable, non-adherent scar. (7) Obliteration of the dead space by a large, firm, pressure dressing held in place by through-and-through steel retention sutures, which prevents hæmatoma and movement, so essential for primary firm union.

Postoperative nursing care. — The patient is placed in the face-down position for 48 hours. Thereafter he is allowed on his side only. Only fluids are given by mouth, for a period of 8 days, with 2 drams of tincture of camphor co. t.i.d., in order to prevent bowel movements. The Penrose drain is removed in 24 hours without removing the dressing. The dressing is removed in 8 days and the skin sutures and steel retention sutures are removed. The incision is then painted with 20% tincture of mercurochrome. Patient is given a laxative and a soft diet. On the 9th day the patient is allowed up. On the 10th day he may be discharged from hospital.

Results. — As stated previously, it was not until the last 10 cases that the technique as described was used. In the first 10 cases, primary union occurred in 7 cases by the 10th post-

operative day, with discharge from hospital in an average of 18 postoperative days. In 3 cases in this group the successful end result was delayed because of skin necrosis. In one case where buttons were used with retention sutures in an effort to obliterate the dead space, two areas of skin necrosis about half an inch in diameter occurred.

The other 2 cases had a small degree of ischæmic necrosis of the skin edges due to one or more of the following reasons: (1) Too many retention sutures, too close together, under too much pressure. (2) Too much subcutaneous tissue removed near the skin edge producing a deficient blood supply to the skin margin. It was for this reason, in the following cases, that a full thickness of subcutaneous fat was left intact at the skin margin. This also prevents adherence of the scar to the sacrum. (3) Too small and too tight a pressure dressing.

These 3 cases required an average of 43 postoperative days before complete healing occurred. Failure at primary union in 10 days was not due to hæmatoma or infection in this series. In one of the first 10 cases, discharge from hospital was delayed for one week because of a rather painful burn of the scrotum, caused by spilling of ether and iodine on the scrotum during the skin preparation at operation. This incident showed the advantage of cetavlon which is a non-irritant.

In the last 10 cases operated on by the method outlined, primary union occurred in 8 days, with no postoperative complications and discharge from hospital occurred in an average of 13 postoperative days. The last 3 patients operated on were discharged from hospital on the 10th postoperative day. All the patients returned to work 3 weeks after discharge from hospital.

Recurrences.—To date, 18 months after the last operation, of the 20 cases operated on, 2 have recurred; one in the first 10 cases and the other in the last 10. Both cases had a purulent discharge at the time of operation which, on culture, grew *Staph. saprophyticus,* non-hæmolytic streptococcus and *B. coli.* One case had had excision and primary closure 5 months prior to my operating on him and since then has had 2 recurrences with 2 further operations done elsewhere. The other case had no previous operation and has had a second operation carried out at Christie St. Hospital 6 months after the first operation, which is a success to date.*

Causes of poor results.—The poor results in the treatment of this condition are due to causes which may be divided into the following headings:

Preoperative causes. — Operation performed when condition is acute. Operation should only be undertaken in the quiescent state and preferably when there is no discharge. The 2 failures in this series had a purulent discharge at the time of operation.

Operative causes.—(1) Tissue dealt with at operation is always infected. (2) Inadequate removal of infected tissue. (3) Poor hæmostasis, resulting in hæmatoma. (4) Incomplete obliteration of the "dead space". (5) Tension on suture line. (6) Insufficient care to closely approximate the skin edges. (7) A poor pressure dressing. (8) The use of a non-absorbable foreign body suture material in the wound, or the use of suture material such as chromic catgut in which there is a large amount of tissue reaction present.

Postoperative causes.—(*a*) Too much movement will give rise to postoperative hæmatoma or delayed tissue healing. (*b*) Contamination of the wound with fæcal material.

SUMMARY

A method of primary closure for pilonidal disease has been presented. It is simple, the hospitalization period is extremely short, the dressing and nursing care is negligible, the result is good functionally and æsthetically and the recurrence rate is low.

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* Since my leaving the General Surgery Service, Dr. W. F. Wales has followed this method of excision and primary closure and has operated on 8 additional cases with successful results and no recurrences, which, along with the other 20 cases, represents a recurrence rate of 7%.

L'homme est visiblement fait pour penser. C'est toute sa dignité et tout son mérite, et tout son devoir est de penser comme il faut.—*Les Pensées* de Blaise Pascal (1623-1662).