

Synchronous abdominal and transsacral approach for excision of sacrococcygeal chordoma

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Key Words. Chordoma ; retroperitoneal neoplasms ; sacrococcygeal region ; bone neoplasms ; nervous system neoplasms ; surgery

Abstract. Sacrococcygeal chordomas are rare retrorectal tumors. The authors have been faced with one such case. They used the synchronous combined abdominosacral approach for surgical resection. Details of the surgical aspects of the technique are described. Safe resection as high as the S₁-S₂ interspace can be performed.

Retrorectal chordomas are relatively rare (3, 4). About 25 years ago, they seemed an incurable disease. Their anatomical position may lead to difficulty in diagnosis, and most surgeons have had little experience with their surgical treatment. Faced with one such case, we have used the combined abdominosacral approach suggested by LOCALIO *et al.* (5, 6).

Case report

A 62-year-old man was admitted to the Surgical Service of the Academic Hospital of Mont-Godinne with a 4-month history of low back pain, aggravated by sitting. Physical exam demonstrated a 10 centimeter-diameter palpable mass in the presacral region. Digital examination of the anus confirmed the retrorectal extension of this mass. The patient had noticed some episodes of paresthesia in both legs, but no change in micturition and defecation.

Bony destruction of the sacrum was obvious on pelvic films. A computerized tomography (CT) of the pelvic region revealed a tumor that had destroyed the coccygeal and sacral bones up to the S3 level (Fig. 1.A).

Sigmoidoscopy, intravenous pyelogram and barium enema were either normal or demonstrated only extrinsic compression by the tumor (Fig. 2). At this stage the diagnosis of chordoma of the sacrum was retained.

Preoperative preparation

Good mechanical preparation of the colon was realized as recommended before colonic surgery.

Technique of operation

The urinary bladder is catheterized. The patient is placed in the right lateral position illustrated in Figure 3, with the right buttock at the edge of the operating table. This lateral position allows a synchronous abdominal and transsacral approach. The abdominal incision originates to the right of the midline above the pubis, runs parallel to the left inguinal ligament, and terminates at the left mid axillary line equidistant from the iliac crest and the tip of the twelfth rib. A large self-retaining retractor is used to hold the wound apart, and the small bowel is gently packed upward with a moist gauze pack. The abdomen is explored for other disease or for evidence of metastases. The operation starts by the surgeon's dividing the developmental adhesions on the left lateral side of the sigmoid colon, exposing the retroperitoneal tissues and finding the ureters and the iliac vessels. Tapes are placed around the iliac vessels for possible temporary occlusion if needed. The incision in the peritoneum is continued carefully down into the pelvis on the left side of the rectum in order to mobilize the rectum away from the anterior surface of

the tumor. Dissection of the rectum is continued down to the level of the levator ani. We also elected to ligate the middle sacral vessels which were relatively enlarged.

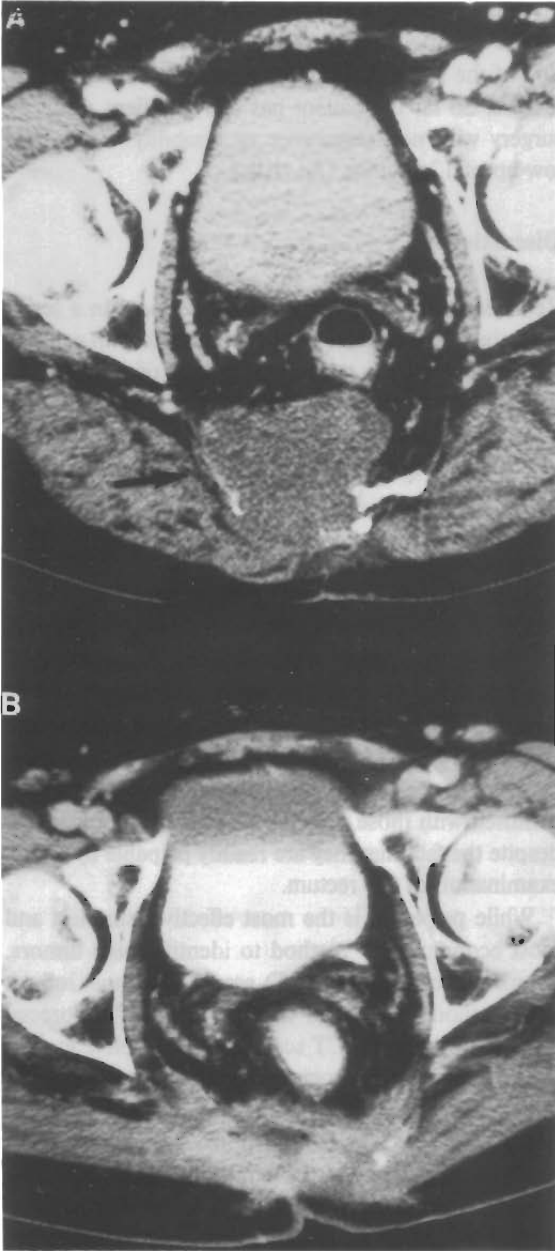


Fig. 1

- A. CT Scan of the pelvic region showing a tumor destroying the sacral bone.
- B. Postoperative CT Scan at the same level as A, showing the complete healing of the retrorectal wall.



Fig. 2

Barium enema demonstrating the extrinsic compression of the rectum by the sacral tumor.

The posterior transverse incision is arched upwards to give an inferiorly based skin flap, in order to increase the distance between the skin suture line and the anus. The gluteus maximus muscles are divided at a safe distance from the sacrum. The anococcygeal ligament is incised allowing to enter the presacral space and to join the abdominal dissection. At this time the iliac vessels are partially occluded by traction on the tapes encircling them in order to minimize blood loss during division of the coccygeous muscles, the piriformis muscles, the sacrospinous and sacrotuberous ligaments. For this part of the dissection good exposure is obtained by insertion of the St Mark's Hospital perineal retractor. The pubococcygeous muscles are left intact, as well as the lower half of the iliococcygeous muscles. The sacrum is then transected at the level determined by the preoperative investigations. During bone transection through the poste-

rior transverse incision, the rectum is protected by the left hand of the abdominal surgeon placed between the posterior wall of the rectum and the anterior surface of the sacrum and the tumor. Careful dissection allowed us to preserve the left S3 nerve. The removed specimen included the coccyx, the sacrum resected up to the level of the S₂-S₃ interspace, the lower sacral roots and surrounding soft tissue (muscles and ligaments). Direct repair of the posterior wall and buttocks was impossible. We had to use a Marlex® mesh in order to reconstruct a wall behind the rectum. The skin wound was closed above the mesh with interrupted sutures after inserting suction drainage. Total blood loss was 800 ml.

Result of operation

The postoperative period was uneventful and the patient was discharged on the thirteenth postoperative day. He had awareness of bladder distension and was able to initiate voiding as soon as the bladder catheter was removed on the sixth postoperative day. Anal continence was also preserved. He did not complain of saddle anesthesia and was ambulatory without help on the fifth postoperative day. Microscopic examination of the surgical specimen revealed margins free of disease. So far the patient has had excellent result of surgery with non recurrence or disability with a follow-up of 12 months (fig. 1.B.).

Discussion

Retrorectal tumors are uncommon lesions. In a series from the Mayo Clinic (4) of 120 patients with primary retrorectal tumors, the largest group of tumors was formed by the chordoma group (25%). Chordoma is a low-grade malignant tumor arising from the remains of the foetal notochord. Some authors consider this tumor a primary bone tumor, but because of the notochord origin, it still has to be classified as a congenital tumor (1, 2).

These tumors are usually slow growing tumors which produce symptoms by pressure on pelvic viscera or nerves. In patients with sacrococcygeal chordoma, the low back pain is characteristically aggravated by sitting (2, 4). In many cases pain is present for several months or years, and tumors reach relatively large size before diagnosis is made. Often, the symptoms are confused with those of an anal fistula or pilonidal cyst despite the fact that they are readily palpable by digital examination of the rectum.

While palpation is the most effective, simplest and most economic (4) method to identify these tumors, computed tomography (CT) scan is the most important method to confirm the diagnosis of retrorectal tumor. Furthermore CT scan allows complete evaluation of the pelvic structures. Preoperative biopsy is unnecessary in patients about to undergo resection (4). About 25 years ago, chordoma seemed an incurable disease, but now a cooperative surgical team that includes a general surgeon and an orthopedic surgeon can safely perform an en bloc resection with tumor-free margin. The operation in the right lateral position by the synchronous abdominosacral approach, as suggested by LOCALIO *et al.* (5, 6), provides maximum flexibility and wide resection of malignant tissue in rather inaccessible area. We have experienced that the

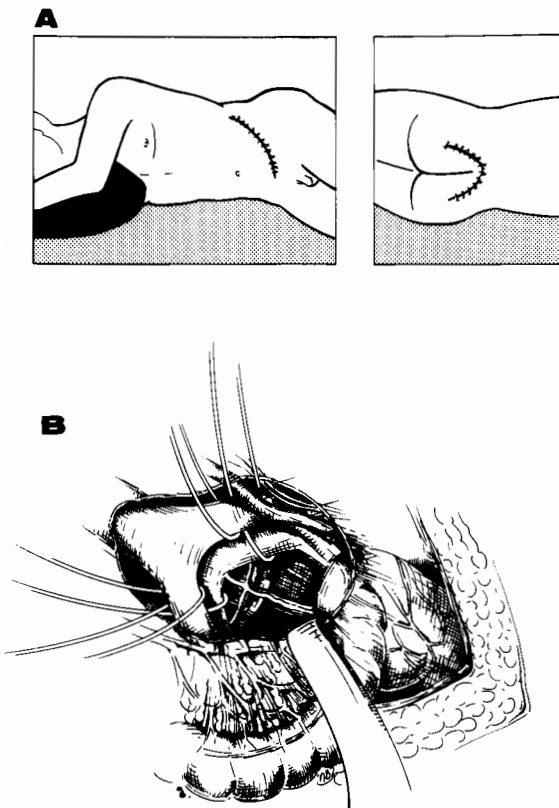


Fig. 3

A. Right lateral position, abdominal incision and posterior transverse incision arched upwards.

B. Abdominal dissection of the rectum from the chordoma, with tapes encircling the ureters and the iliac vessels.

abdominal exposure allows good protection of the rectum, ureters and major blood vessels. The temporary occlusion of the iliac vessels reduces also the blood loss during the sacral dissection.

The sacrum must be sectioned on a level which ensures radicality. The choice of the level should be based on careful preoperative investigations (CT scan, lateral tomogram) and not be decided peroperatively. The gluteus maximus muscles are better divided on a safe distance from the sacrum, as chordoma has a tendency to invade these muscles. This is also valid for the piriformis muscles which originate on the sacrum. These muscles should preferably be divided through their tendinous parts close to the greater trochanters.

After resection as high as the S₁-S₂ interspace with sacrifice of S₂ nerve roots, patients commonly developed neurogenic bladder. However, such an extensive resection is preferable to incomplete resection. Radiotherapy has been used as adjuvant therapy for patients with residual chordoma or suspected residual chordoma (2, 4, 7). However, the effects of radiotherapy are difficult to determine because of the absence of good control study (1). In a comprehensive review of 222 cases of chordoma, GRAY *et al.* (3) noted that average survival was 5.7 years. A chordoma patient should, if possible, be followed 5 to 10 years as local recurrences often are detected late.

Résumé. *Chordome sacrococcygien : voie d'abord combinée abdominale et transsacrée.* Les chordomes sacrococcygiens sont des tumeurs rétrorectales rares. Les auteurs ont été confrontés avec un tel cas, pour lequel ils ont utilisé une approche simultanée combinant la voie abdominale et la voie transsacrée. Les détails de la technique sont décrits. Si nécessaire, une résection complète peut être réalisée jusqu'à l'espace S₁-S₂.

Samenvatting. *Simultane abdominale en transsacrale toegangsweg voor excisie van een sacro-coccygeal chordoma.* Het sacrococcygeal chordoma is een laag-gradig kwaadaardig gezwell dat ontspruit uit de resten van de notochorda foetalis.

De anatomische ligging bemoeilijkt sterk de diagnose en veel chirurgen hebben weinig ervaring met de behandeling ervan.

Met een dubbel, op elkaar inspelend, chirurgisch team bestaande uit een algemene- en orthopedisch chirurg, werd een dergelijke tumor simultaan langs abdominale en transsacrale weg verwijderd.

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Submitted for publication on April, 17, 1989.

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