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Laparoscopic assisted resection of a ilio-sacral chondrosarcoma: A single case report

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ABSTRACT

INTRODUCTION: Sacral tumor often involves en bloc surgical resection with tumor-free margins and functional reconstruction challenges. Such a management is challenging because of difficulties in accessing the lesion, risks for damages of neighboring organs, and risks for massive blood loss. In posterior approach, because first elevation of the sacrum allows dissection of presacral structures, such risks for damages intrapelvic structures and hemorrhage are especially high.
PRESENTATION OF CASE: We report here about a laparoscopic assisted posterior resection of a ilio-sacral chondrosarcoma in a women, 6 weeks after vaginal delivery. Primary laparoscopic approach consisted in dissection of the ureter and of the colon with control to the pelvic vessels and nerves and determination of limits of the resection. The iliac osteotomy was performed from posterior approach with saw and osteotomes at the predetermined extralesional level. The defect was replaced with a structural fresh frozen femoral allograft and stabilization performed by lumbo-ischial screw/rod fixation.
DISCUSSION: Surgical time was about 360 min. No intra-postoperative complications occurred. Blood loss was estimated to about 1000 cm^3. Histologic examination of the specimen showed tumor-free margins. At 8 months follow-up, the patient appears to be without recurrence. Because of the denervation of the nerve root L5 and below, she mostly uses two canes, but she has a functioning quadriceps. Continence and voiding functions for urine and stool have fully recovered.
CONCLUSION: Primary laparoscopic approach appeared to be a good way for preparation orthopedics sacroiliac resection to reduce postoperative morbidity, intraoperative blood loss and better assure macroscopic tumor-free margins.

1. Introduction

Primary therapy for sacral tumor often involves surgical resection and functional reconstruction challenges. Such a management is challenging because of difficulties in accessing the lesion, risks for damages of neighboring organs, and risks for massive blood loss due to an extensive vascularity. Preoperative angiography should be performed to characterize the vascular anatomy.[1] Preoperative tumor embolization has been proposed, exposed however the patients for ischemic neuropathy that can result in motor and sensory deficits in the pelvis and lower extremities.[2] We present a new surgical concept for management of ilio-sacral tumors based on a combined anterior laparoscopic approach and posterior open resection of the tumor.

2. Presentation of case

A 33-year-old woman, 6 weeks after vaginal delivery, complained of lumbosacral dysesthesia, which led her gynecologist to have a lumbo-pelvic CT performed. This revealed an intensive vascularized mass of the sacrum reaching from the foramina L5 to S3, crossing the sacro-iliac joint and extending into the iliac bone. MRI and angiography were suggestive of a chondromatous process (Figs. 1 and 2). CT guided biopsies confirmed a cartilaginous process, which in synopsis with the images was graded as GI chondrosarcoma. Neuropelveological assessment diagnosed a S2-4 radiculopathy right with vulvodynia, coccygodynia, low back pain and bladder hypersensitivity, and a L5-S2 irritative sciatica without signs for neurogenic damages. Urodynamic testing showed bladder hypersensitivity with postvoid residual urine at 60 mL. Orthopedic examination was unremarkable with normal gait.

As there is no effective adjuvant treatment for low grade chondromatous lesions, the patient after extensive repeated discussion opted for resection of the tumor and reconstruction realizing that mutilation was unavoidable due to the involvement of sacral nerve

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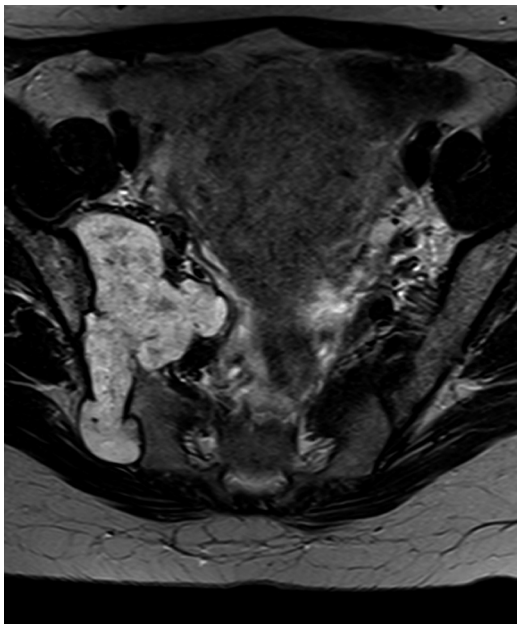

Fig. 1. Imaging shows the osteo-chondromatous lesion involving the sacrum and the sacro-iliac joint reaching from the neuroforamina L5 down to S4.

roots. Massive pelvic congestion due to postpartum situation was considered as an additional risk factor for hemorrhage. The patient signed informed consent forms for the procedure and authorization for communication as a case report (Figs. 3–5).

For the procedure, the patient was placed in unstable lateral decubitus to allow free access anteriorly for laparoscopy as well as the back by rotating the patient without need for new sterile preparation. For the laparoscopy, one 10 mm trocar was placed in the navel to introduce a 10 mm/0° HDTV optic and three further 5 mm-trocars were placed in the lower abdomen. For identification of the different sacral nerves roots (SNR), intraoperative electrical stimulation using a laparoscopic probe with a current fixed by 250 μs/35 Hz/4 V was applied to the nerves.[3]

The procedure was started with the full exposure of the os sacrum and the right pelvic sidewall by dissection of the right pararectal space. The medial sacral vessels were coagulated. After transection of the sacral hypogastric fascia, the medial and caudal limits of the tumor and as well as the SNR were identified. While the SNR L#5, S#1 and S#2 were attached on the tumor, the SNR S#3 and S#4 did not show any contact with the tumor and were exposed in order to avoid their damages during the rest of the procedure.

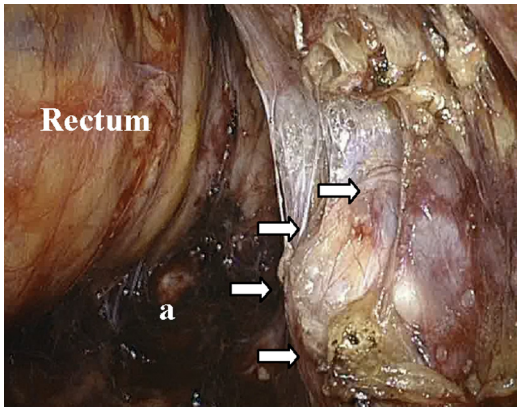

Fig. 2. Dissection of the right pararectal fossa (a) with exposure the medial limits of the tumor.

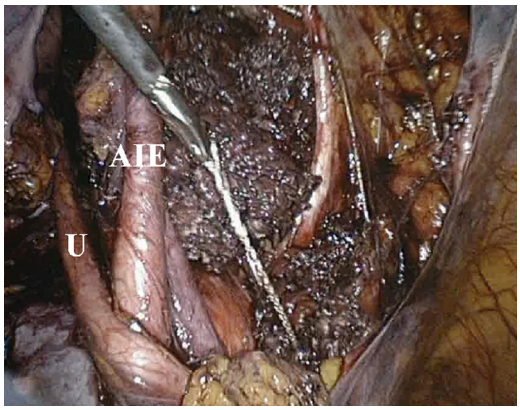

Fig. 3. Passage of the Gigli saw through the foramen L5–S1 (U: ureter; AIE: arteria iliaca externa).

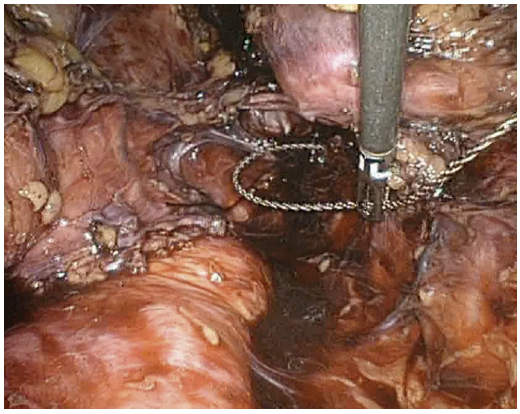

Fig. 4. Gigli saw passed through the foraminas L5–S1 and S1–S3 for transection of the sacrum medial to the tumor.

The next step consisted in the full exposure of the pelvic ureter followed by the coagulation/transection of the internal iliac and the lateral sacral vessels. All cardinal vessels below the tumor were also transected including the pudendal and inferior gluteal vessels. The sciatic nerves were identified just before its entry through the great sciatic foramen. To reduce risk for bleeding during the gluteal dissection, the superior gluteal vessels were dissected at the level of the suprapiriform level of the great sciatic foramen, separated from the superior gluteal nerve, and coagulated selectively. After dissection of the right femoral nerve, the major psoas muscle was transected twice proximally and distally to the tumor to permit en

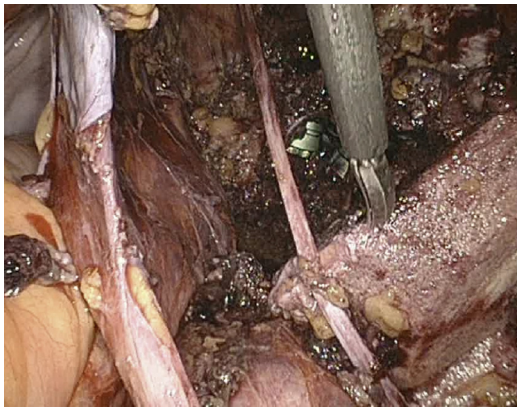

Fig. 5. End situ – defect replaced with a structural fresh frozen femoral allograft and stabilization performed by lumbo-ischial screw/rod fixation.