

ANTERIOR SACRO-ILIAC FUSION : A NEW VIDEO-ASSISTED ENDOSCOPIC TECHNIQUE

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SUMMARY:

In this paper we present a case of sacroiliac fusion due to an intraarticular osteocondroma of the sacro iliac joint which was the cause of severe pain and disability. The excision of the lesion and the fusion was successfully performed by utilizing minimally invasive surgical techniques.

Although the application of this technique requires a dedicated and highly experienced team, the encouraging result of our first case with minimal morbidity and disability due to the operation, makes us to recommend this technique in sacroiliac fusion, especially when combined with additional procedures such as drainage, biopsy or excision.

Key words: Sacroiliac fusion, laparoscopy, intraarticular osteocondroma

ANTERIOR SACROILLAK FÜZYON : VIDEO ASİSTANSI İLE YENİ BİR TEKNİK

ÖZET:

Bu yazımızda ciddi ağrıya neden olan sakro iliak eklemi intraartiküler osteokondromasının minimal invazif teknikle eksize edilmesi sunulmuştur.

Özel deneyimli bir ekip gerektirmesine rağmen ilk vakadaki başarılı sonucumuz avantajları gözönüne alındığında bu tekniğin sakro iliak füzyonun yanında rezeksiyon, biyopsi gerektiren vakalarda güvenlikle kullanılabileceğini göstermektedir.

Anahtar kelimeler: Sakro iliak füzyon, laparoskopi, osteokondrom,

Sacro-iliac (SI) joint fusion is rarely indicated in orthopedic practice. Indications include specific and non-specific infections and pelvic instabilities originating from trauma and arthritis . Sacro-iliac joint fusion combined with other procedures such as biopsy and/or drainage can be performed with conventional surgical techniques described elsewhere via anteriorly or posteriorly . Such techniques need extensive soft tissue dissection with high morbidity rates.

Improvements in techniques and technology in video-assisted endoscopic surgery have made this kinds of methods safe procedures in the diagnosis and the treatment of various spine pathologies. After successful applications of thoracoscopy for diagnostic and therapeutic purposes in a wide variety of pleural and lung pathologies, recently it is started to be employed in some spinal pathologies including biopsy, discectomy, abscess drainage and anterior fusion (1-3).

In this article we described a new video-assisted endoscopic surgical technique for the biopsy and anterior fusion of the sacro-iliac joint.

CASE:

A 42 year-old male patient was admitted with low-back pain during the last two years

radiating down to left sacro-iliac joint and to the leg. Two years ago a nephrectomy was performed due to recurrent nephrolithiasis with persistent infection. There was tenderness on the left SI joint posteriorly and anteriorly with the deep palpation. There was no neurologic deficit and the blood tests were within the normal limits. In the plain X-Ray there was sclerotic area on the left SI joint. The CT scan revealed a benign looking lesion originating from the iliac side located antero-superior portion of the left SI joint, which was thought to be an osteochondroma.

SURGICAL PROCEDURE

Colon preparation was made by 'whole gut irrigation' technique and the patient was fasted on the night prior to the operation. Additionally, Neomycin base was given orally at 3 hour intervals, beginning at 2:00 p.m. on the day prior to surgery. The patient was given a Fleet enema, 3 hours prior to surgery, to empty the distal colon of any residual fluid.

A single dose of second generation cephalosporine was administered in the holdong area preoperatively. Under general anesthesia, the patient was put on the operating table in supine position.

A bone graft was prepared from the left iliac crest, with the standard technique. The incision was closed by 4/0 interrupted sutures.

Two 10 mm trocars were inserted on right midaxillary line, 3cm above and 5cm below the level of umbilicus. Another 10mm trocar was inserted just above the umbilicus, through which the scope was introduced into the abdominal cavity. Two 10/12mm trocars were inserted on left midaxillary line, 3cm above and 5cm below the level of umbilicus (Figure 1) . The operating table was rotated slightly towards right and 30° Trendelenburg position, right after the insertion of the trocars. Thus, the viscera could be swept downward to the patient's right and gravity maintained the position of the small bowel.

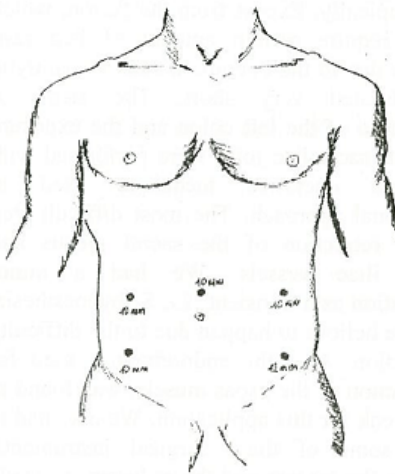


Figure 1: The trocar sites used for the operation.

For mobilization of the lateral gutter of the left colon, along the white line of Toldt, the bowel was retracted medially and posteriorly, by using endobabcock clamps introduced via trocars in the right upper and left upper quadrants and was freed with its mesentery by using both sharp and blunt dissection techniques. Both left colon and proximal portion of the rectum was mobilized until promontorium was clearly exposed. Most of the dissection was carried out sharply by endoscissors. Blunt dissection is used in the area of ureter, to mobilize the descending colon from psoas muscle and to mobilize the proximal portion of the rectum from sacrum.

A spatulated Bovie cautery tip or a endodissector used for the blunt dissection, to tease the tissues away from the ureter, gonadal vessels and sacrum. At this step of the operation special care was taken in identification and protection of the left ureter, crossing the left iliac artery.

After adequate mobilization, the left colon was then retracted towards the right shoulder of the patient, thus the retroperitoneal dissection plan between left Iliac artery and vein, and left Psoas muscle was exposed. At this step of the operation, blunt dissection is used, as described above (Figure 2). The fascia was incised by an endoscissors and a cautious blunt dissection was carried out to spare left iliac artery and vein, Obturator nerve, lumbosacral trunk and the vessels medially from Psoas muscle which was then retracted laterally, by means of endoretractors (Figure 3). The dissection was extended to the posterior border of the Iliac muscle. The fibrous insertion of the muscle was spared from the structures below to expose the sacro-iliac joint and the lesion within the anterior part of it. For this purpose a specially designed periost elevator with a round cross-sectional body shape used to cope with our reducer and avoid gas leakage.

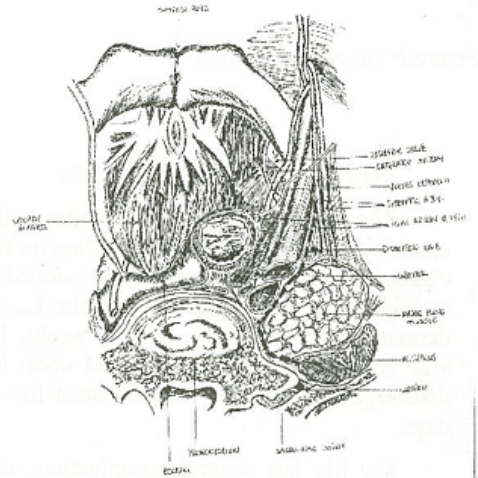


Figure 2: The anatomic plan used for the exposure of the SI joint.

A specially designed Chisel, with a long and round cross-sectional shaped body was used to expose the lesion within the sacro-iliac joint, which was then extracted by a long

hypophysis Rongeur as bytes. The length of the 10/12 mm trocar through which the Rongeur was introduced, was decreased, by cutting the tip of it to 5cm length to provide enough space for the jaws of the instrument to work. A 5mm reducer was modified to cope with the instrument, which has a rectangular cross-sectional shape, to avoid gas leakage. After the excision of the lesion, the cavity was filled by chipped bone grafts, obtained from the Iliac crest.

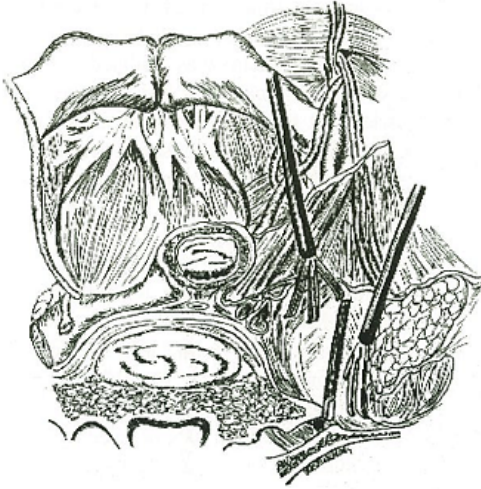


Figure 3: The exposed SI joint.

POSTOPERATIVE COURSE:

The patient did well throughout the operation. He was started oral feeding on the eighth postoperative hour. He developed a transient hypoesthesia concerning the L₅, S₁ dermatomes, which lasted for two weeks. He was hospitalized for 10 days and upon his discharge bed rest was recommended for 45 days.

On his last control examination, one year after the surgery, he was found to be completely pain free and without any complaint.

DISCUSION

Due to the recent technical achievements, therapeutic utilization of video-assisted endoscopic surgery has gained great

popularity . A broad range of spinal pathologies has become amenable to minimal invasive surgical techniques. In addition to their diagnostic efficiency, minimally invasive techniques are also being applied therapeutically in a variety of spinal pathologies after the encouraging preliminary results (4-5). Today in many spine centers spinal therapeutic procedures such as discectomy, anterior fusion, abscess drainage and biopsy can be managed by minimal invasive surgical techniques.

Standard endoscopic pulmonary and spinal operations including thymectomy, thoracoscopic sympathectomy, discectomy, anterior fusion and abscess drainage are being performed in our clinic recently. Our intention was to perform spinal surgical procedures, with less morbidity. We were able to achieve the best results by performing this operation laparoscopically. Except from the fusion, which anyhow require certain amount of bed rest, disability due to the operation, such as paralytic ileus, durated very short. The steps of mobilization of the left colon and the exposure of the left sacroiliac joint were performed with the same operative technique used in conventional approach. The most difficult step was the retraction of the sacral plexus and internal iliac vessels. We had a minor complication as a transient L₅, S₁ hypoesthesia, which we believe to happen due to the difficulty in retraction. Also the endoretractor, used for the retraction of the psoas muscle, was found to be too weak for this application. We also had to modify some of the surgical instruments, including the trocars and the reducers, to avoid gas leakage, which is essential for the exposure and thus for the safety of this operation.

Although there are some different approaches to achieve sacroiliac fusion, we recommend the utilization of this method when one needs to perform a fusion combined with some other procedures such as biopsy, drainage or resection. In our review of literature, we could not find any report about the performance of this type of operation. Since ours is probably the first case reported in this field, we believe in our technique also needs some improvement, such as the combination of simultaneous lateral screwing, to secure the fusion which also enable the patient to be ambulated earlier.

The performance of this technique requires a dedicated team and high experience in laparoscopy. We believe in the improvement of instrumentation will also enable surgeons to

perform these operations more safely and comfortably.

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