

## 외상성 허리 탈장: 증례 보고

가천대 길병원 외과학교실

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### - Abstract -

## Traumatic Lumbar Hernia: Report of a Case

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The occurrence of traumatic hernia is rare. However, traumatic lumbar hernias are the most frequently occurring traumatic hernias. Superior lumbar hernias occur more frequently than inferior lumbar hernias, but for anatomical reasons, among traumatic lumbar hernias, inferior lumbar hernias occur more frequently than superior lumbar hernias. Repair of a lumbar hernia is very difficult. Mesh fixation to the bony part and general weakness of surrounding tissue make repair of a lumbar hernia tricky. A traumatic lumbar hernia was repaired using transfascial fixation around the defect to secure the mesh. This technique is another choice for a lumbar hernia technique.

**Key Words:** Lumbar hernia, Traumatic abdominal hernia, Blunt abdominal trauma

### I. Introduction

Though the incidence of blunt abdominal trauma increases, traumatic abdominal wall hernias remain rare. Elasticity of abdominal wall may resist sheer force from outside of body and increased abdominal pressure. Traumatic abdominal wall hernia occupies 0.9~1.5% of blunt trauma.(1) Most of the traumatic abdominal wall hernia is lumbar hernia. Lumbar area is the weakest area of abdominal wall for blunt

trauma. Traumatic lumbar hernias occur in the area that is bounded superiorly by the 12<sup>th</sup> rib, inferiorly by the iliac crest, posteriorly by the paraspinous muscles, and anteriorly by the posterior border of the external oblique muscle. Traumatic lumbar hernia is encountered infrequently and that hernia represents a difficult problem of diagnosis and repair for the trauma surgeons.

A case of traumatic lumbar hernia repaired with modified transfascial fixation technique is reported

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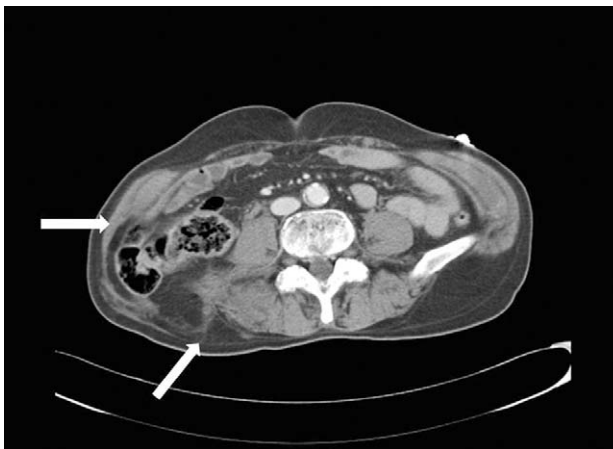
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with literature review.

## II. Case

A 64-year-old male patient presented to emergency room with multiple injury as a car-stricken pedestrian. He had multiple arm and leg fractures at right side of the body. And he also had facial bone fracture, basal skull fracture, pelvic bone fracture and subarachnoidal hemorrhage. Computed tomographic (CT) scan of abdomen revealed abdominal wall defect on the right flank, between psoas muscle and posterior aspect of external oblique muscle (Fig. 1), iliac crest and 12<sup>th</sup> rib (Fig. 2). Colon protruded



**Fig. 1.** Tangential view of abdominal CT scan. A huge abdominal wall defect and intestinal herniation is located between the white arrows

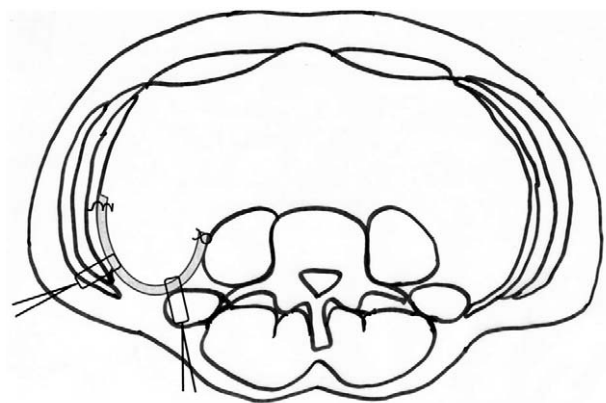


**Fig. 2.** Coronal view of abdominal CT scan. Intestine protrudes through the abdominal wall defect between the 12<sup>th</sup> rib and iliac crest (between white arrows)

through this defect. Several days after, general condition stabilized and operation for hernia repair was done. It was impossible to undergo laparoscopic hernia repair because of no allowance of lateral position by orthopedic surgeon due to unstable fractures. Abdominal exploration performed through a right paramedian incision revealed no intra-abdominal organ injuries. There was a 11×4 cm sized defect on the right flank as same as CT scan. Incision was made on the parietal peritoneum along right paracolic gutter and ascending colon was mobilized to medial side to expose retroperitoneal structures and abdominal wall defect. Proceed Surgical Mesh (Ethicon Endosurgery, Cincinnati, OH, USA) was selected for repair of hernia and it was fashioned according to the size of the defect. Mesh was placed over the defect in the preperitoneal space with 5 cm overlap on all sides. Four transfascial fixations were applied around defect and perimeter of mesh was secured to abdominal wall with tacks and to psoas muscle with interrupted non-absorbable sutures (Fig. 3). Right colon was returned to original position and incised peritoneum was sutured with absorbable 3-0 interrupted suture to reapproximate the initial peritoneal incision.

## III. Discussion

Sudden increase in intra-abdominal pressure and extensive shear force applied to the abdominal wall



**Fig. 3.** Fixation of mesh. Transfascial fixations are used to fix mesh around the margin of the defect. Periphery of mesh is fixed to the abdominal wall with tacks and to the psoas muscle with sutures

make traumatic abdominal wall injury. Most lumbar hernias occur in the superior lumbar triangle. However most traumatic hernias occur in the inferior lumbar triangle.(2) Lower abdomen is anatomically weaker area, especially inferior lumbar triangle. Superior lumbar triangle is covered posteriorly by lattissimus dorsi, or at least by its thick and strong aponeurosis. In contrast, no muscular or aponeurotic structures cover the inferior lumbar triangle.(3)

Improperly positioned three-point restraint of car can be a cause of traumatic lumbar hernia. Lap shoulder junction of three-point restraints positioned above the iliac crest may have created shear injury to the lateral and posterior abdominal wall muscle firmly attached to the iliac crest, with subsequent herniation.(4)

Dennis et al. reported that 1.7% of patients who checked abdominal CT scan after blunt trauma had abdominal muscle disruption.(1) Usually skin is intact and muscle and fascia is disrupted in the traumatic abdominal wall hernia. Damschen et al. defined traumatic abdominal wall hernia as the herniation through disrupted musculature and fascia associated with adequate trauma, without skin penetration and no evidence of a prior hernia defect at the site of injury.(5)

Bender et al. found that 0.2% of blunt trauma patients had traumatic lumbar hernia.(6) Netto et al. showed that among traumatic abdominal wall hernias, lumbar hernia was 95% and inferior lumbar hernia was 81%.(7)

Lumbar hernia is classified according to location: superior lumbar (Grynfeltt-Lesshaft triangle), inferior lumbar (Petit triangle) and diffuse (postoperative or traumatic) lumbar. The defect of this patient was on the right flank, between psoas muscle and posterior aspect of oblique muscles, pelvic brim and 12<sup>th</sup> rib. These boundaries involves superior and inferior lumbar triangle and hernia of this patient was diffuse form of lumbar hernia.

Techniques of ventral hernia repair are primary fascial reapproximation without mesh, primary fascial reapproximation reinforced with mesh, and bridging unopposed fascial edges with mesh.(8) Hernia repair with mesh implantation become stan-

dard procedure throughout the world.

Polypropylene and polyester have propensity to adhere to the bowel wall when placed in direct contact with abdominal viscera. So composite mesh was used intraperitoneally. Composite mesh with temporary degradable-coated strands can provide a barrier between the intraperitoneal contents and the synthetic mesh.(8) Proceed mesh is one of composite mesh, polypropylene covered with oxidized regenerated cellulose.

If computed tomography is not checked, it is difficult to diagnose acute traumatic lumbar hernia because of no specific signs and symptoms. In acute stage, only 30% of lumbar hernia patients had hernia evidence on physical examination.(7) CT scan is the best diagnostic tool for traumatic lumbar hernia. It can accurately show the anatomy of the disrupted musculature layers, show the presence of herniated intra-abdominal viscera or retroperitoneal fat, and show associated intra-abdominal injuries. Abdominal wall musculature denervation atrophy complicating flank incisions must differentiated from lumbar hernia. Computed tomography is very useful for differentiation.

Due to the rarity of the condition, as well as the lack of prospective follow up data, it is impossible to determine the best treatment strategy. As mentioned previously, the most of traumatic lumbar hernias involve inferior triangle. Usually abdominal wall muscle is avulsed from the iliac crest in case of inferior lumbar hernia and the sewing onto the bony portions of the hernia boundaries and the general weakness of the surrounding tissue is difficult part of lumbar hernia repair. Transfascial fixation and tack is used for mesh fixation. Usually transfascial fixation is applied to perimeter of mesh and tack is applied between transfascial fixations. In this patient, it was difficult to apply transfascial fixation peripherally because of anatomical reasons. So transfascial fixations were applied around abdominal wall defect. Perimeter of mesh was fixed with tack on abdominal wall side. Sutures were used for fixation of psoas muscle side to avoid nerve damage.

Usually most surgeons recommend immediate repair of traumatic lumbar hernia. Indications of immediate laparotomy were associated injuries of

hollow viscus, mesentery, and diaphragm. Combined intra-abdominal injury was found in 61% of traumatic lumbar hernia patients.(9) But 10~44% of traumatic abdominal wall hernias treated conservatively with success.(7) Some surgeons recommend delayed reconstruction of traumatic abdominal wall hernia. Delayed repair minimize the risk of surgical site infection, minimize the risk of subsequent failure of repair, ensure better definition of the edge of the defect and ease the reduction of the hernia.(9)

Laparoscopic repair for lumbar hernia has several good points. They are excellent anatomic view, identification of the exact location of the defect and usual benefits of laparoscopic surgery. But it has as same difficulty of mesh fixation as the open repair. Open surgery can be reserved for large defects (traumatic or diffuse) and in cases where the laparoscopic approach has failed.(10)

#### IV. Conclusion

Traumatic lumbar hernia is rare hernia. But the most frequent traumatic hernia is traumatic lumbar hernia. Anatomical location of lumbar hernia makes it difficult to correct. The sewing onto the bony portions of the hernia boundaries and the general weakness of the surrounding tissue is difficult part of lumbar hernia repair. Transfascial fixation around defect is modified technique for lumbar hernia repair and traumatic lumbar hernia could be treated successfully with this technique.

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