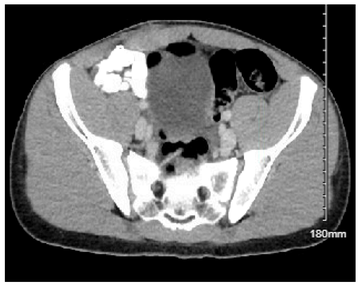
Minimally Invasive Repair of a Pediatric Traumatic Spigelian Hernia

Kathleen Park MD, Tyler Doan MD, Keith King MD, Lora Melman MD, FACS

Advanced Surgical and Bariatrics NJ, PA /Robert Wood Johnson University Hospital / New Brunswick, New Jersey

Introduction

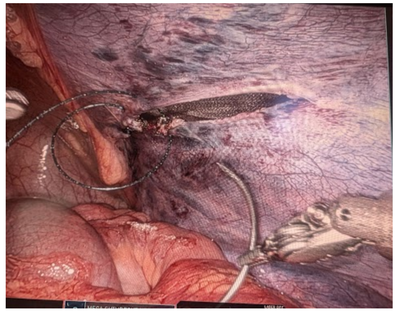
Traumatic abdominal wall hernias are rare. Even more so are spigelian hernias that occur along the anterior portion of the wall along the semilunar line. These comprise approximately 1% of all abdominal hernias and can be either congenital or acquired but are most commonly secondary to trauma at the weakest fascial intersection between the semilunar and arcuate lines. The literature for management of traumatic spigelian hernias especially in the pediatric population is limited mostly to case reports. Management options range from open operative repair to non-operative watchful waiting although there is a noted 20% risk of small bowel strangulation. For pediatric patients, the use of mesh can be controversial with limited available literature regarding its use in the repair of ventral hernias. Each case must be reviewed on an individual basis taking into account the size, location, age, and co-morbidities or the patient as compared to adult hernia repairs where mesh and both robotic / laparoscopic MIS techniques are routinely utilized. We present a case where a pediatric adolescent patient s/p traumatic spigelian hernia was managed with a robotic ventral hernia repair with absorbable mesh.



Above: cross-sectional view of the hernia



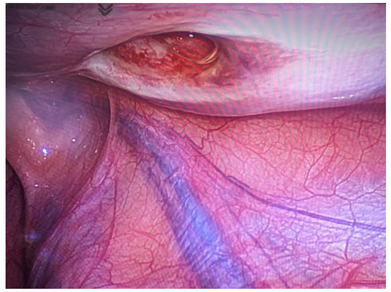
Above:: sagittal view of the hernia



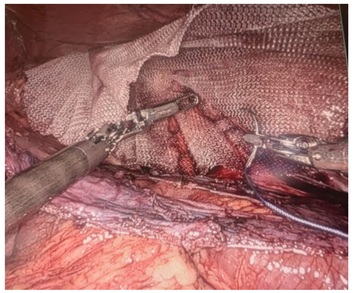
Closure of the pre-peritoneal flap with 2-0 v-loc

Case Report

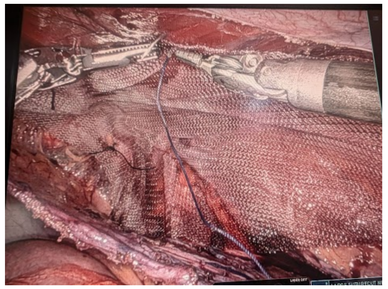
This patient is a 13 year old active and healthy male with no significant past medical history, who presented to outpatient clinic s/p a traumatic abdominal hernia that occurred after hitting the handlebar of his bicycle the week prior. Due to persistent lower abdominal pain and noted bulge just right of the midline that worsened with valsalva, he presented for further evaluation, he was noted to have no obstructive symptoms. CT performed with the valsalva maneuver and both IV and oral contrast was notable for bulging of a small loop of bowel into the posterior surface of the anterior abdominal wall, lateral to the right rectus muscle, along the linea alba above the umbilicus. There was no change during valsalva which is consistent with a spigelian hernia. Given his persistent symptoms, after a thorough discussion with his family, the decision was made to proceed with a robotic repair of the ventral hernia with absorbable mesh.



Intra-operative view of the spigelian hernia



Placement of the mesh



Fixation of the mesh with 0 vicryl

Operative Procedure

After obtaining consent from his family, the operative site was marked in holding. The patient was brought back to the OR with pre-operative antibiotics, subcutaneous heparin, scopolamine patch, and IV tylenol administered and sequential compression devices placed. Time out was performed and anesthesia induced, with the patient positioned with the left arm tucked and abdomen prepped and draped. A veress needle at Palmers point was used to access the abdominal cavity, and abdomen insufflated to 15 mmHg. A 5 mm 0 degree scope was placed via an optiview trocar and a 3 cm fascial defect was easily found in the right lower abdominal wall. A transversus abdominis plane block was performed with the remaining trocars placed and robot docked. The pre peritoneal pocket was created going from midline out laterally, in the retrorectus space. The fascia was taken with monopolar energy until the cord structures were encountered. Similar to an inguinal hernia dissection, this was carried out further to expose Cooper's ligament medially and inferiorly down to the pubic tubercle to allow for full visualization of the myopectineal orifice. The defect was closed with absorbable 0 monofilament and reinforced with mid-weight synthetic absorbable poly-4-hydroxybutyrate mesh, cut to size with 10 cm of overlap on all sides. The mesh was fixed to Cooper's ligament, the medial rectus body, and laterally above the level of the ASIS with 0 vicryl. The flap was sutured with 2-0 absorbable monofilament, instruments withdrawn and skin closed.

Discussion

Pediatric surgeons most commonly encounter inguinal hernias for which high ligation of the sac is performed without the use of mesh. For direct inguinal hernias, there has been more consideration in placing mesh in late adolescent pelvic floors, as the physiology at that point has transitioned to being more similar to that of an adult. In this case report, for a traumatic spigelian hernia in the right lower quadrant, in an area where mesh placement intersected with coverage of the myopectineal orifice, the decision was made to optimize the repair with mesh reinforcement. Increasing consideration for adolescent hernia repairs with synthetic mesh is being made for indirect hernias greater than 2.5 cm and direct hernias. Synthetic absorbable mesh may be a viable option to consider in a growing adolescent in an otherwise uncontaminated field for repair of a traumatic spigelian hernia.

Conclusion

A minimally invasive repair may be considered in an adolescent pediatric patient hernia, utilizing the robotic platform to assess the bowel, perform appropriate dissection of the myopectineal orifice and create a pre peritoneal flap for placement and precise mesh suturing to reinforce the integrity of the repair.

Works Cited

Kangabam, Boris. "Traumatic Spigelian hernia following blunt abdominal trauma." *Cureus* 15.2 (2023).
Kropilak, Andrew D., and David E. Sawaya. "Traumatic spigelian hernia in a pediatric patient following a bicycle injury." *The American Surgeon* 88.8 (2022): 1933-1935.
Kim, Sung Hyun, et al. "Inguinal hernia repair with or without mesh in late adolescent males." *Annals of Surgical Treatment and Research* 100.4 (2021): 246-251.
Thamri, Fatma, et al. "Traumatic Spigelian hernia in a child." *Journal of Pediatric Surgery Case Reports* 75 (2021): 102099.