A New Standard: Robotic Trans-Abdominal Preperitoneal Inguinal Hernia Repair with Primary Defect Closure

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Background

Inguinal hernia (IH) repairs are among the most commonly performed procedures worldwide, accounting for approximately 75% of all abdominal wall hernias. In the United States, around 800,000 IH are repaired annually via open or laparoscopic techniques, typically without closing the primary defect due to space limiations. However, advances in robotics are making new standards possible. In this case report, we present a robotic Trans-Abdominal PrePeritoneal (rTAPP) IH repair with primary defect closure performed using the da Vinci Xi robot.

Case Description

A 68-year-old male was admitted due to two-year history of symptomatic bilateral IH. The defects were painful but easily reducible and without sign of strangulation or obstruction. Surgical access was achieved using the Hassan technique. Both a left direct and smaller, right indirect IH were visualized. Dissection above the left groin was performed using monopolar scissors via the right port. Fenestrated bipolar forceps via the left port were used to dissect the hernia sac, exposing a significant defect (3x3cm) in the transversalis fascia of the posterior wall of the inguinal canal . Due to its size the decision was made to close the primary defect. This was done using a robotic large needle driver and V Lock 3.0 continuous sutures. An additional single suture was placed lateral to the inferior epigastric vessels to achieve complete defect closure. After confirming there were no signs of tissue tension or bleeding, the mesh was placed and the peritoneum was closed with continuous Vi Lock 3.0 sutures.

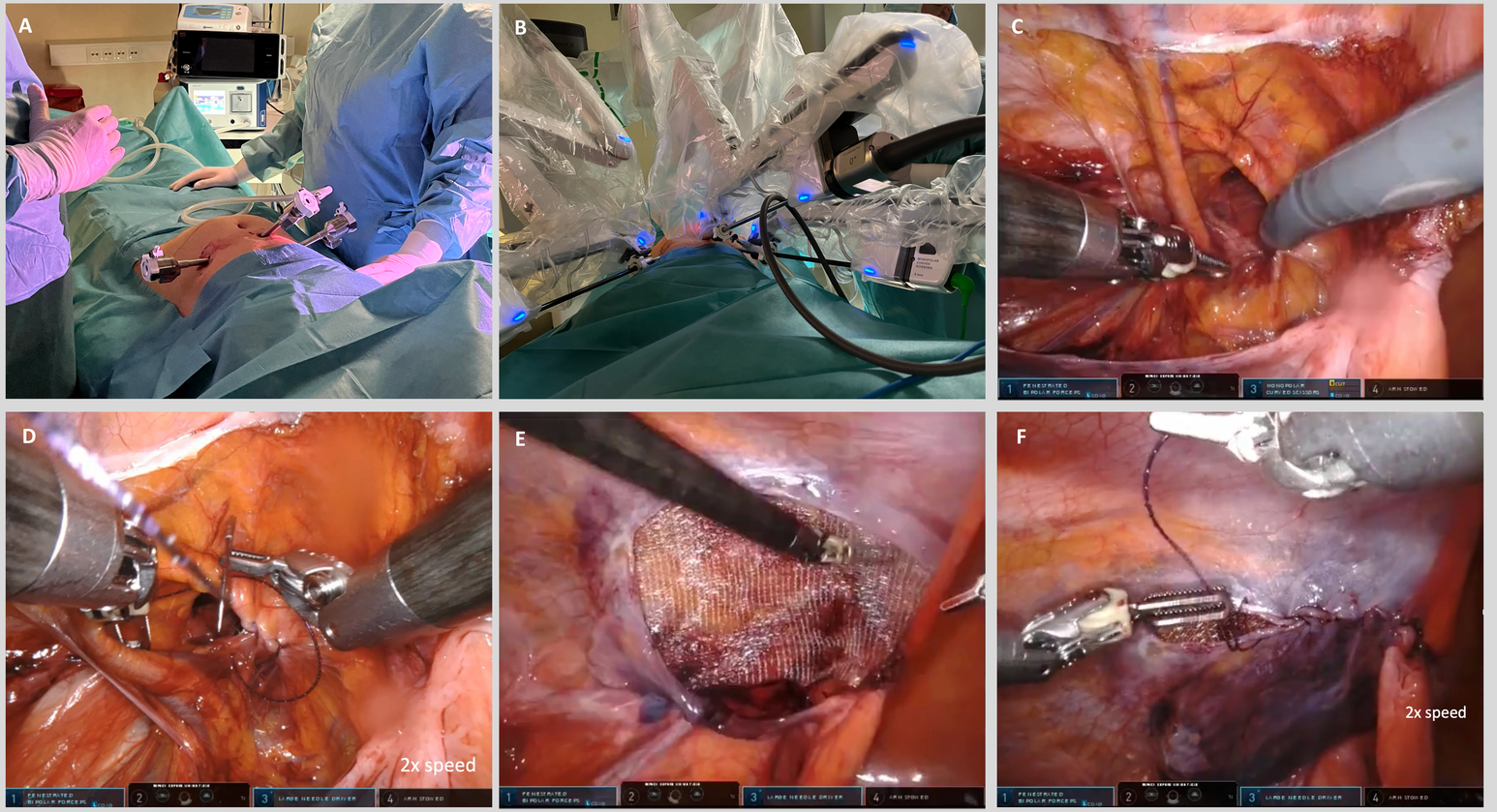


Figure 1. (A) Patient positioned with access trochars placed. (B) Robotic arms positioned. (C) Primary defect locally dissected and visualized. (D) primary defect closed using continuous sutures. (E) Mesh placement over closed primary defect. (F) closure of peritoneum over mesh using continuous sutures.

Discussion

Despite being common procedures, IH repairs are still associated with high rates of complications including recurrence and postoperative pain when performed via laparoscopic or open surgery. Additionally, primary defect closure is not routinely indicated, largely due to space limitations preventing laparoscopic instruments from gaining safe access. This is a risk factor for future recurrence. As more literature is published on robotic IH repair, rTAPP offers a promising future in routine surgical practice, revolutionizing outcomes. Most studies demonstrate that robotic ease of use and ergonomics overcome the disadvantages and physical limitations associated with conventional methods. Specifically, high-resolution 3D images offer superior visualization while wristing with tremor filtration enables more precise maneuverability over laparoscopic instruments. rTAPP is also associated with shorter hospital stays and fewer postoperative complications including recurrence, pain, and surgical site infection.

Conclusion

Primary IH defect closure may enter routine clinical practice thanks to robotic surgery, revolutionizing outcomes compared to conventional methods

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