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Technical Note
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A Novel Technique for the Introduction of Suture Needle in the Abdomen without the Use of Ports in Robotic and Laparoscopic Surgery

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Abstract

Background: In laparoscopic and robotic surgery most non-stapled procedures can now be performed utilizing all 5 mm and 8 mm ports. However a major obstacle that remains is the introduction of the suture needle into the operative field. We describe a method of introducing the suture needle irrespective of its size without the need of ports.

Methods: We describe a method of percutaneously introducing any suture, irrespective of its size, without the use of ports. This is accomplished through the use of a suture passer which allows percutaneous entry of the needle from the skin into the operative field.

Results: We have employed this technique in 273 cases without any complications.

Conclusion: Our technique is safe, effective, and cost-efficient. It avoids the potential complication of needle loss and may save operative time.

Keywords: Suture needle; Percutaneous; Portless

Introduction

In laparoscopic and robotic surgery most non-stapled procedures can now be performed utilizing only 5 mm and 8 mm ports. However a major obstacle is the introduction of the suture needle into the operative field. A standard SH or CT-2 curved needle is 26 mm in length and requires at least an 11-mm port for introduction. A variety of techniques are used to overcome this such as skiing the needle or upsizing the 5 mm port to a larger trocar [1]. In robotic surgery, the suture needle is usually introduced through the camera port, which requires undocking of the camera or passing the suture needle prior to docking. These techniques are time-consuming and potentially dangerous. We describe a method of introducing the suture needle irrespective of its size without the need for ports.

Materials and Methods

A suture passer is used to grasp the free end of a suture (the end that is not attached to the needle). After induction of pneumoperitoneum, the suture passer is introduced into the abdominal cavity percutaneously through the abdominal skin. This is done under vision to avoid any injuries from the introduction of the suture passer. Next, the suture is grasped either laparoscopically or robotically and pulled into the abdomen, allowing the needle to enter the abdominal cavity following its natural contour and causing no trauma. The removal of the needle is conducted in a similar fashion, where the suture passer is introduced into the peritoneal cavity and the end of the suture is grasped. The suture grasper is then gently pulled causing delivery of the needle through the skin.

Results

We have introduced the suture needle into the abdomen using this technique in 273 cases during the period January 2014 to January 2018. We have used this technique for laparoscopic inguinal hernia repairs, laparoscopic femoral hernia repairs, robotic-assisted inguinal hernia repairs, robotic-assisted femoral hernia repairs, and ventral hernias without any complications. Patient demographic characteristics are represented in Table 1 and procedure types are indicated in Table 2. One case of a small hematoma secondary to puncturing of the epigastric artery during the introduction of the suture passer occurred. This was detected intraoperatively and controlled with

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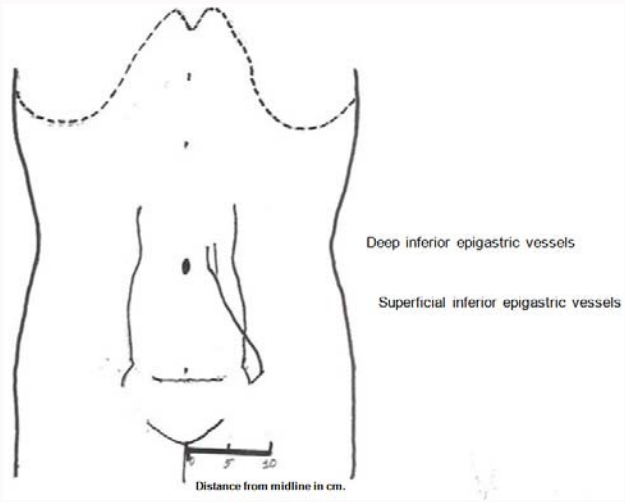

Figure 1: Surface anatomy of anterior abdominal wall.

Table 1: Demographic characteristics of patients undergoing laparoscopic and robotic-assisted inguinal and femoral hernia repair using the technique described. BMI=body mass index.

Characteristic	Value
Age, yrs	
Mean (SD)	55.8 (15.0)
Range	13-99
Gender, n (%)	
Female	30
Male	243

pressure. It can be avoided by staying away from the location of the inferior epigastric artery during the introduction of the suture needle.

Table 2: Surgical procedures for which the suture needle was introduced with this technique.

Procedure	n (%)
Laparoscopic inguinal hernia repair	109
Laparoscopic Femoral Hernia Repair	2
Robotic-assisted inguinal hernia repair	159
Robotic-assisted femoral hernia repair	3
Total primary procedures	273

Discussion

We have employed this technique in a variety of different procedures such as robotic and laparoscopic inguinal and ventral hernias. This technique is effective, safe, versatile and provides both time and cost savings. It can be used in any laparoscopic or robotic procedure regardless of the size or the BMI of the patient. No additional cost is incurred since the suture passer is already used in most procedures however if it is not being used, a non-disposable suture passer can be substituted. This technique is efficient because it avoids the hassles of undocking the robot or removing a port to introduce the needle, which is often a time-consuming step. This method also avoids the potential of needle loss, which can occur when the needle is introduced and left in the abdomen prior to docking. One must be familiar with surface anatomy when using this technique to avoid puncturing a surface vessel and causing postoperative hematoma.

References

1. MacKenzie RK, Mahomed AA. The benefits of a curved suture needle in laparoscopic partial fundoplications in infants. Pediatr Surg Int. 2004;20(6):474-5.