



35.1 Indications for Laparoscopic Approach to Varicocelectomy

Indications for surgery of varicoceles include symptoms like scrotal pain, testicular volume discrepancy (>20% decrease on the affected side), and abnormal semen analysis [1]. The goal of treatment is to block the reflux in the internal spermatic vein while preserving the internal spermatic artery and vas deferens. Different procedures have been reported including laparoscopy, which has gained popularity in recent years [2, 3]. Laparoscopic techniques include the inguinal ligation of the enlarged testicular vessels (Ivanissevitch operation) or high retroperitoneal mass ligation of all enlarged vessels above the internal inguinal ring (Palomo procedure) [4]. Moreover, modifications such as internal spermatic artery-sparing procedures, lymphatic-sparing techniques, and plication of the spermatic fascia over the enlarged vessels have been described [4].

35.2 Preoperative Workup and Considerations

Physical examination is performed in supine and standing positions. Varicocele can be identified as a nontender mass (“bag of worms”) above the testis during palpation. Preoperative ultrasound is mandatory to exclude renal tumors or hydronephrosis as a cause of mechanical compression of the testicular vein. In the OR, a urinary catheter is not routinely inserted. We do not apply perioperative antibiotics.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-030-58043-8_35. The videos can be accessed individually by clicking the DOI link in the accompanying figure caption or by scanning this link with the SN More Media App.

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35.3 Anesthetic Considerations

Laparoscopic varicocelectomy is performed under general anesthesia and endotracheal intubation with muscle relaxation. The elective operation is usually performed in an outpatient setting.

35.4 Operative Technique (Palomo Procedure)

35.4.1 Equipment

35.4.1.1 Conventional Technique

- 3 or 5 mm and instruments and trocars
- 5 mm 30° laparoscope 3- or 5-mm Kelly or Maryland dissector
- 3 or 5 mm Metzenbaum scissors
- 5 mm clip applier
- 3 or 5 mm hook monopolar cautery (grounding pad)

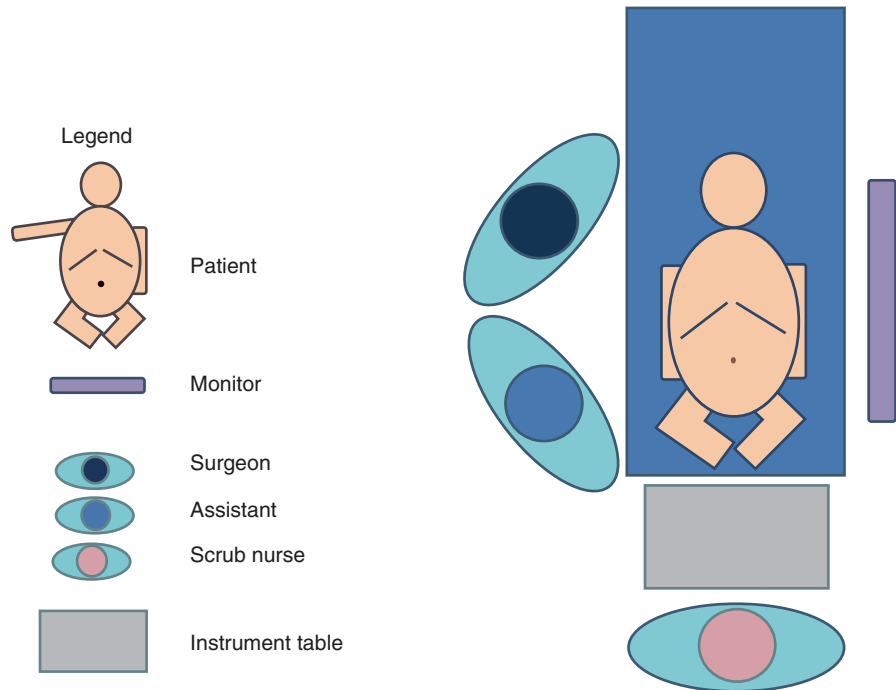
35.4.1.2 SIPES (Single-incision Pediatric Endosurgical) Technique

- A wound retractor
- Size 6.5 latex sterile powder-free surgical glove as described previously (see Chapter SIPES Appendectomy)
- A 3 or 5 mm 45-cm laparoscope with a 90° angulated light adapter
- 5 mm atraumatic grasper
- Monopolar hook
- Polyglactin suture 2-0

35.4.2 Positioning

The patient is placed supine with arms tucked to side. During the procedure it is helpful to bring the patient in Trendelenburg position. The surgeon and the first assistant stand on the right

Fig. 35.1 Positioning of patient, surgeons and monitors



side. The scrub nurse is on the left side. The monitor is placed towards the patient's feet (Fig. 35.1).

35.4.3 Trocar Placement

Three trocars (generally $2 \times 3\text{--}5\text{ mm}$ and $1 \times 3\text{--}5\text{ mm}$ in the umbilicus) are used. The first trocar is inserted through the umbilicus in an open technique for the 5 mm 30-degree telescope. Depending on patients age the pressure/flow of the pneumoperitoneum needs to be kept between 8–10 cm H₂O and of 4–6 L/min respectively. For left sided varicocele, a 3–5 mm trocar is placed in the left upper quadrant for the instrument of the left hand. A 5 mm trocar is then inserted in the right lower quadrant for the 5 mm clip applier (Figs. 35.2 and 35.3).

35.4.3.1 Single Incision Pediatric Endosurgery (SIPES)

A 5 mm 45-cm scope is introduced through the before sliced thumb of the glove port into the abdominal cavity and capno-peritoneum is established as described previously [5].

35.4.4 Operative Milestones

The gonadal vessels and internal inguinal ring are identified. The peritoneum is incised with a Metzenbaum scissors or a monopolar hook over a length of 2–3 cm two cm proximal to the internal inguinal ring, taking care not to injure the vessels themselves (Milestone 35.1). The vessels are dissected and mobilized. When a sufficient window is created behind the



Fig. 35.2 Equipment for varicocele

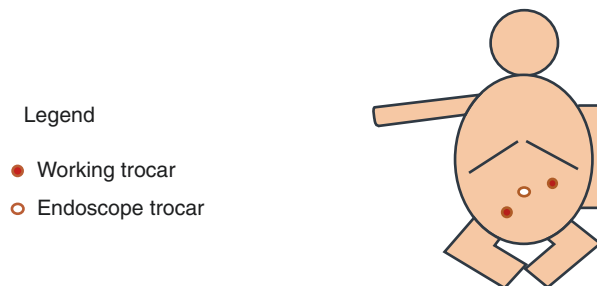
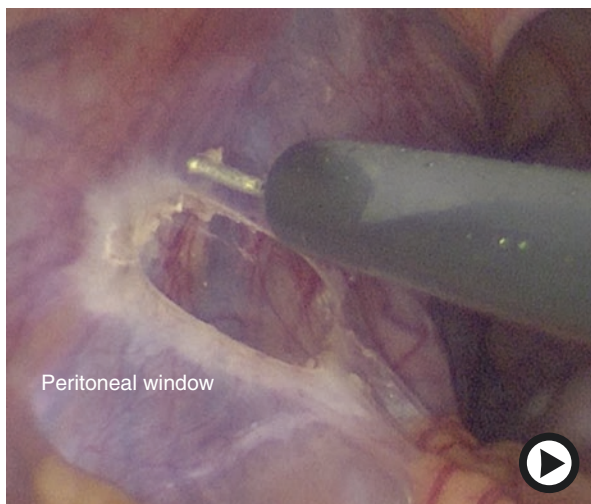
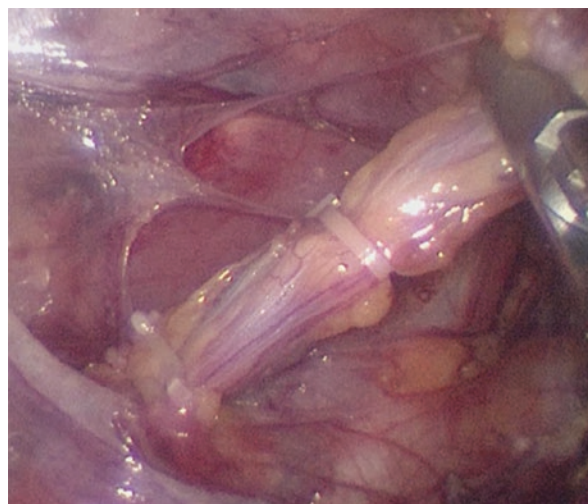


Fig. 35.3 Trocar placement for left sided varicocele

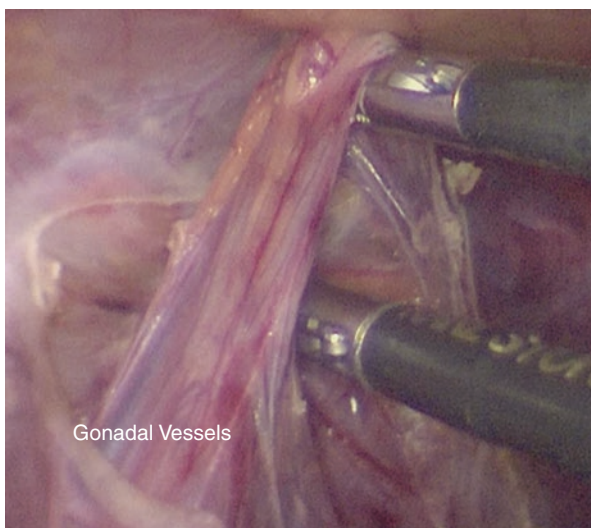
vessels, the vascular bundle is grasped and elevated to position the clips (Milestone 35.2).



Milestone 35.1 After Identification of the spermatic vessels, a peritoneal window of adequate length is incised with a monopolar hook, 2–3 cm two cm proximal to the internal ring (Video 35.1 Laparoscopic varicocelectomy). (► <https://doi.org/10.1007/000-2vy>)



Milestone 35.3 The entire vascular bundle is clipped with non-absorbable clips. Two clips are applied distally and proximally, leaving a space of about 1 cm between the clips

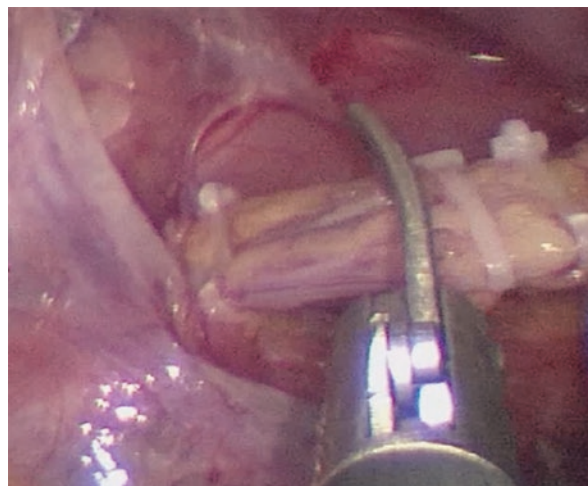


Milestone 35.2 The spermatic vessels are mobilized and elevated from the underlying psoas muscle

Two non-absorbable polymere ligation clips (or equivalent Metal clips) are placed distal and proximal—leaving a length of 1 cm between the clips (Milestone 35.3). The vessels are then divided between the clips (Milestone 35.4).

Alternatively, the vessels may be cauterized.

The opened retroperitoneum in this region is examined before closure to make sure that there are no accessory vessels left. Closure of the peritoneum is not necessary. The ports are removed under direct vision.



Milestone 35.4 The clipped vessel bundle is divided with Metzenbaum scissors in the space between the proximal and distal clips

35.5 Postoperative Care

The Patients are discharged on the day of surgery. Non-opioid analgetics (e.g Acetaminophen/Paracetamol) are given. Restriction of sports is recommended for 10–14 days. Follow-up is advised after 12-months to exclude recurrence.

35.6 Pearls/Tips & Tricks

1. For incision of the peritoneum a monopolar hook is often better than using cold scissors as it causes less bleeding, which may impair visualization.

2. If a lymphatic-sparing technique is chosen to prevent hydrocele formation, preoperative injection of methylene blue or isosulfan blue into the space between tunica vaginalis and tunica albuginea of the scrotum offers lymphatic mapping [6]. By staining of lymphatic vessels these structures can then be spared during varicocelectomy.
3. Incision of the peritoneum should be long enough and the window which is created large enough to facilitate safe and gentle mobilization on the vessels. Dissection should be close to the vessels.

35.7 Pitfalls & Ways to Avoid

1. Artery-sparing techniques are associated with a higher relapse rate [7].
2. Extensive use of cautery or harmonic dissection of the retroperitoneal space can injure the genitofemoral nerve and may result in a sensory deficit of the ipsilateral anterior thigh.

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