Background

Inguinal hernia recurrence is treated by surgery and hernia itself, even if only slightly symptomatic, is an indication for surgical intervention. There have been significant changes in hernia surgery recently (1). The failures of traditional tissue approximation repair (2) have been attributed by surgeons not only to errors in technique but also to a substantial basic error (3) that violates a fundamental principle of surgical technique: the approximation, by suture, of structures that are anatomically different, far away from each other and reconstructed under tension. Recent studies have highlighted the inherent primary physiological “fragility” of the musculoaponeurotic structures of the posterior wall of the inguinal canal, responsible for both their progressive weakening and the occurrence of the hernia. This pathological condition may also be secondary to a metabolic disorder involving involution of collagen fibers and elastic fibrous connective tissue (4).

Peacock (5) and Read (6) found morphological and biochemical evidence of this defect in the transversalis fascia, with altered collagen fibril periodicity, reduced hydroxyproline and abnormal lipid infiltration. They also reported an unacceptable failure rate with hernia repair by tissue approximation (7). These considerations have led to the development of new methods for the surgical repair of inguinal hernias, based on the principle of a total “dynamic barrier” (8). These techniques involve the use of a complex dynamic self-regulating prosthesis (i.e. “protesi autoregolantesi dinamica” or PAD) as proposed by Valenti.
Patients and methods

From September 2009 to September 2010, 50 men aged between 24 and 67 years (mean age 44.6) with inguinal hernia underwent hernia repair (PAD and flat plug hernia repair) at the Department of General Surgery, University of Catania (14). Work duties were reported as light by 60% of the patients and heavy by 40%. All patients had previously undergone routine preoperative investigations and were admitted on the day of surgery, which was performed under local anesthesia (lidocaine 1%) after informed consent had been obtained.

The hernia was found to be indirect in 38 cases (76%) and direct in 12 (24%). Nine (18%) were classified as small, 32 (64%) as medium and nine (18%) as large.

The procedure was carried out as follows: a 5-6 cm incision was made. When the external oblique fascia was reached, the inguinal nerves were blocked with the injection of local anesthetic. The external oblique muscle fascia was then incised and the front wall of the inguinal canal opened. The cremasteric muscle was spread and the hernia sac identified and flushed back into the internal ring. The cremaster was sutured (crural) and repair of the transversalis carried out. The smaller mesh was placed around the spermatic cord parallel to the inguinal ligament and sutured to the medial muscular plane. The larger mesh was attached to the pubis, taking care not to include the periosteum with the Prolene suture. A second stitch was sewn between the prosthesis and the inguinal ligament, 1 cm apart, and a third stitch applied in front of the hole surrounding the spermatic cord. Finally, the external oblique fascia was sutured, leaving the cord below it.

Patients were able to walk a few hours after surgery and were discharged the next day. Follow-up (minimum 6 months, maximum 1 year) consisted of close monitoring for complications for the first 15 days and scheduled check-ups every 30 days and then every two months to rule out any complications due to the prosthesis and check the repair.

Results

The procedure was fast, easy and well tolerated by patients, given the reduced postoperative discomfort. Walking was encouraged 2-3 hours after surgery. Postoperative administration of analgesics in the wound site was required in just 18% of patients, and only for the first 24-48 hours after the surgery. The short hospitalization and discharge 24 hours after the operation is a great advantage to both patients, enabling their faster return to everyday activities, and the hospital, reducing costs associated with a longer stay. To date there have been no recurrences or other significant complications.

Conclusions

Inguinal hernioplasty using PAD is now well standardized and technically easy. There is no need to shape or cut the prosthesis due to its intrinsic ability to adapt dynamically to different shapes and sizes of inguinal canal. Postoperative complications and early and delayed recurrence are limited, suggesting that this is a valid alternative for the prosthetic repair of inguinal hernias.
Dynamic self-regulating prosthesis in inguinal hernia repair

References