

# Robotic Sacrocolpopexy with Autologous Fascia Lata: A Case Series

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## Abstract

**Objectives:** Apical prolapse involves the upper vagina or vaginal vault after hysterectomy. Treatment is indicated for symptomatic women, and surgical approach is considered for women who failed or refused conservative therapy. We performed 10 pickups of autologous fascia, used for robotic sacrocolpopexy (RSCP).

**Materials and Methods:** We included patients between 60 and 80 years old who showed a Pelvic Organ Prolapse Quantification (POP-q) over the second stage and with symptoms related to prolapse.

**Results:** All of them underwent autologous fascia lata (AFL) pickup from the right leg and after to RSCP. One patient underwent also posterior colporrhaphy. The mean intraoperative time was 199.2 min (183–230 min). No intra-operative complications were reported. POP-q assessment during follow-up showed improvements: C point gained on average 7.6 points (5–8) and mean values went from –0.6 to –8.2 cm (–7 to –9 cm). The three women who had anterior compartment defects shows good anatomical reconstitution with a mean Aa and Ba value of –2.83 cm (–2.5 to –3 cm) and gained 4 points (average gain: 3.5–4.5 cm). Total vaginal length (TVL).

**Conclusion:** According to these data, in our experience, AFL employment showed a good anatomical result from the first to last follow-up.

**Keywords:** Fascia lata, graft, mesh, prolapse recurrence

## INTRODUCTION

Pelvic organ prolapse (POP) is a common condition among women of all ages.<sup>[1,2]</sup> The prevalence of POP varies depending on region or country from 3% to 50%.<sup>[3,4]</sup> Frequently, women are asymptomatic: only 3% of US women report symptoms, but POP is detected in 41%–50% by examination.<sup>[5]</sup> Furthermore, POP symptoms are often less or not specific and women start to report symptoms when prolapse edge is 0.5 cm beyond hymenal ring.<sup>[5,6]</sup> Apical prolapse involves the upper vagina or vaginal vault after hysterectomy. Treatment is indicated for symptomatic women, and surgical approach is considered for women who failed or refused conservative therapy.<sup>[1]</sup> Apical prolapse surgery goal is resuspending the

upper vagina.<sup>[7,8]</sup> There are many surgical routes to treat apical prolapse: sacrocolpopexy (SCP) is one of them<sup>[5,7,9]</sup> and robotic approach is a safe and effective choice.<sup>[8]</sup> Sacral colpopexy is considered the most effective and durable treatment for advanced apical prolapse.<sup>[10,11]</sup> The goal is to resuspend the vagina to its anatomically correct position by securing the vaginal apex to the sacrum. This can be approached using a variety of techniques, including the use of either autologous tissue or mesh. In these series, we show our experience of autologous fascia lata (AFL) use performing robotic SCP (RSCP). The primary outcome was anatomic prolapse recurrence determined by the POP Quantification (POP-Q) examination.

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## METHODS

All preoperative and surgical procedures were performed at Alessandro Manzoni Hospital between December 2019 and October 2020. The study involves human study, but the IRB/IRC approval was exempted.

We included patients between 60 and 80 years old who showed a POP-q over the second stage and with symptoms related to prolapse with physical and mental ability to accomplish the 24-month follow-up. Patients with neuromuscular diseases (i.e., amyotrophic lateral sclerosis, muscular dystrophy, and myasthenia gravis) or trauma or previous surgery to the knee bilaterally were excluded from the study. Previous gynecologic surgery was not an exclusion criterion. All patients gave written informed consent before participating in the study. Preoperative evaluation included complete history collection, general clinical evaluation, gynecological clinical evaluation with preoperative POP-q assessment, clinical and invasive urodynamic examinations, orthopedic clinical evaluation, and routine blood tests. Patient data were extracted from medical records and patient surveys. Data analyzed included preoperative demographics, operative timing, postoperative hospital stay, surgical complications, and POP-Q examination. Complications were categorized using the Clavien–Dindo classification system. Mechanical and medical bowel preparation was administered to all patients the day before the surgery. Intravenous antibiotic was administered and anti-embolism devices were applied to each leg before anesthetic induction. The orthopedic surgery was performed before the gynecologic procedures. Preferably, AFL grafts were PICKED UP from the nondominant side IN PATIENTS WITH NO prior surgery IN THE SITE OF THE FASCIA SAMPLING. All patients were placed supine position. The lower limb was positioned on a leg holder roller with semi-bent thigh and flexed knee [Figure 1]. The sterile field was prepared from the thigh to the foot. The greater trochanter and lateral femoral condyle were identified

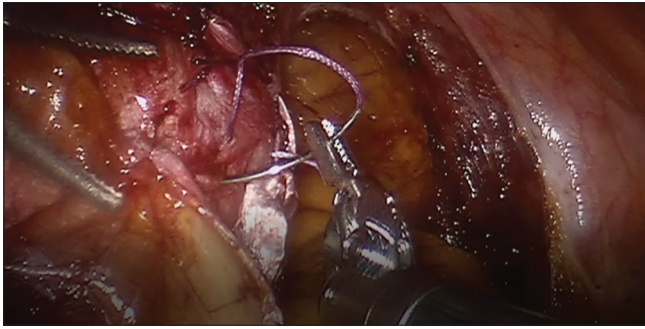
and marked. A 15–20 cm longitudinal incision is carried out 5 cm distally and anteriorly to the greater trochanter. The incision moved down the fascia lata, hemostasis of the blood vessels was performed, and the fascia was exposed. Two autografts were harvested: the first from the posterior region (8 cm × 4 cm) and the second from the anterior region (10 cm × 3 cm) [Figure 2]. The sizes may vary depending on the indications of the gynecologist. The grafts were immediately placed into a sterile saline solution for later use. Accurate inspection of the incision was performed and layer incisional closure was carried out. Finally, a pressure dressing was applied to the wound. The patients then were reprepared in dorsolithotomy position for robot-assisted surgery, and an 18 French Foley bladder catheter was placed. We used Da Vinci Si robotic system: all four robotic arms and a 12 mm assistant port were utilized. A 12 mm camera port was placed periumbilically, pneumoperitoneum was obtained, and other ports were arranged in commonly “W” configuration. Patients were placed in 30° Trendelenburg position, and the robot was docked. Fenestrated bipolar forceps, camera, monopolar scissors, and ProGrasp forceps were, respectively, used in arms 1, 2, 3, and 4. The peritoneum overlying the sacrum was dissected, and the vertebral anterior longitudinal ligament was exposed. If required colon was reflected through laparoscopic bowel retractor how described by Burgess and Elliott (Burgess and Elliott, 2012). The anterior peritoneum and bladder were dissected from the anterior vaginal wall toward the introitus, and posteriorly, the peritoneal reflection was incised to ward off the rectum from the posterior vaginal wall and exposed off levator ani muscle fascia. A vaginal sizer was involved to supply countertraction during dissection. Then, the posterior graft was sutured to the posterior vaginal cuff wall through 3–4 interrupted sutures (Ethibond) and anchored to the levator ani muscle fascia through 2 interrupted sutures in Ethibond. The anterior graft was sutured to the anterior vaginal cuff wall through 3–5 interrupted sutures in Vicryl and one suture in Ethibond to the vertebral anterior longitudinal ligament



**Figure 1:** Autologous fascia lata (AFL) pickup from the right leg



**Figure 2:** The incision moved down the fascia lata, hemostasis was performed, and the fascia was exposed



**Figure 3:** The anterior graft was sutured to the anterior vaginal cuff wall through 3–5 interrupted sutures in Vicryl

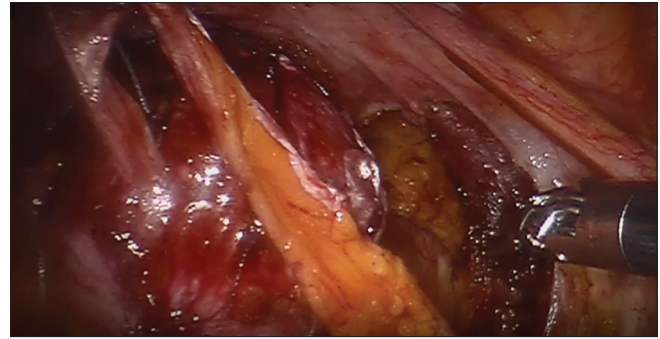
after proper tightened [Figures 3 and 4]. The peritoneum was closed by overlying the mesh with V-Loc 3-0. Finally, for all patients were applied a vaginal pack and ice pack on the thigh, while any drain was used.

Postoperative management included early mobilization: when possible patients were allowed to walk with crutches 1<sup>st</sup>–2<sup>nd</sup> day after surgery. The vaginal pack and the Foley were removed the day after surgery, and the postvoid residue was monitored. The anti-thrombus elastic stockings were kept for the duration of hospitalization. Generally, discharge was on the 2<sup>nd</sup> or 3<sup>rd</sup> postoperative day. Before, discharge we collected operative parameters: intra-operative complications, hemoglobin losses, postsurgery complications, postvoid residue, and analgesic drug use.

Follow-up was performed 1, 6, 12, and 24 months after surgery. Postoperative POP-q scores, harvest site morbidity, and operative parameters were recorded every time.

## RESULTS

We considered 11 women who underwent RSCP with AFL use. The mean age was 71 years (61–78). The mean body mass index was 24.52 kg/m<sup>2</sup> (18.3–32.5 kg/m<sup>2</sup>). All of them had vaginal delivery: three of them have three vaginal deliveries, three have two, and the last have only one. The mean age of menopause was 49.8 years (40–56 years), and 4 of 11 had iatrogenic menopause for gynecological surgery. Three women had a cancer history (ovarian, endometrial, and breast cancers). Comorbidity was poor: one patient had asthma and another one was a cardiovascular patient with carotid stenosis and angina. Eight patients underwent vaginal hysterectomy (VH) before our surgery: One of them performed also tension-free vaginal taping. The youngest woman underwent VH and anterior colporrhaphy and after it was performed laparoscopic SCP. Prior to surgery, the investigations showed urinary symptoms in two women as voiding difficulty with urinary residue. One of these two women had mixed incontinence and nycturia. Constipation and sexual dysfunction were reported in two



**Figure 4:** The peritoneum was closed by overlying the mesh

patients. Each of them had II POP stadium except two patients with POP stage III. The mean C value was  $-0.6$  cm ( $-1$  to  $-3$  cm) showing vaginal vault prolapse in all the patients. Three of them had conspicuous anterior prolapse with a mean Aa value of  $+1.16$  cm ( $+1$  to  $+1.5$  cm) and a mean Ba value of  $+1.16$  cm ( $+1$  to  $+1.5$  cm). Posterior compartment assessment showed a mean Ap value of  $-1.9$  cm ( $-1$  to  $-3$  cm) and a mean Bp value of  $-1.7$  cm ( $0$  to  $-3$  cm). All of them underwent AFL pickup from the right leg and after to RSCP. One patient underwent also posterior colporrhaphy. The mean intraoperative time (IOT) was 199.2 min (183–230 min). No intra-operative complications were reported. The mean blood loss was 2.4 g/dl (1.2–4.5 g/dL). Nonsteroidal anti-inflammatory drugs were stopped on the 1<sup>st</sup> postoperative day except for one patient who had temperature 72 h after surgery. Only three women had negative urinary residue on the 1<sup>st</sup> day whereas others on the 2<sup>nd</sup> day after surgery.

Follow-up showed improvement of urinary symptoms: only urge incontinence persisted in a woman who already had it, but stress urinary incontinence, nycturia, and voiding difficulty disappeared. Moreover, bowel symptoms were not at follow-up. Instead, sexual dysfunction persisted at follow-up in a patient who already had it. POP-q assessment during follow-up showed improvements: C point gained on average 7.6 points (5–8) and mean values went from  $-0.6$  to  $-8.2$  cm ( $-7$  to  $-9$  cm). The three women who had anterior compartment defects show good anatomical reconstitution with a mean Aa and Ba value of  $-2.83$  cm ( $-2.5$  to  $-3$  cm) and gained 4 points (average gain: 3.5–4.5 cm). TVL was the same than prior to surgery unless for one case (from 9 to 3 cm). Posterior compartment showed also improvement with an average Ap and Bp value of  $-2.9$  cm ( $-2.5$  to  $-3$  cm), respectively, with 1 cm and 1.2 cm of increment. The mean follow-up was of 17.4 months. No minor or major complications occurred. The mean postoperative hospital stay was 2.3 days (range: 2–3.2). After the intervention, there was a significant quantitative improvement of the parameters Ba, Bp, and C of the POP-Q score ( $P < 0.001$ ). The objective cure rate at 24 months was 100%. No case required a laparotomic

conversion; however, all the patients complained of a modest pain at the point of abdominal fixation of the autologous fascia. After 1-week follow-up, the surgical incisions were healing well and the patients were tolerating physical activity. At 2-year follow-up, available for all patients, no complications occurred and no recurrences were reported.

## DISCUSSION

Abdominal SCP is an effective and safe surgical routine to treat vault prolapse, and we chose robotic approach for its advantages as a better vision during dissection to avoid intra-operative complications and greater range of movement.<sup>[12-16]</sup> Moreover, RSCP shows a better anatomical cure rate than traditional abdominal route, and minimally invasive approach is associated with poor blood loss, less day of hospitalization, better recovery, and reduced morbidity.<sup>[5,15,17,18]</sup> In fact we complications during surgery WERE NO REPORTED, with minimal blood loss in all the patient postoperative pain was low ( mean vas score of 3) with short hospitalization time. Anatomical cure at every follow-up appointment was satisfactory for patients and even better clinical anatomic assessment through POP-q always showed increased values in all compartments (anterior, vault, and posterior). Moreover, our C point gain was similar to values reported by several authors all performing RSCP<sup>[19]</sup> and employing synthetic mesh.<sup>[20-22]</sup>

Synthetic mesh use is related to many complications such as mesh erosion and exposure, pelvic pain, and graft's infection:<sup>[21-24]</sup> Employment of AFL may avoid mesh-related complications with the same anatomical and functional cure rate.<sup>[23-25]</sup> About efficacy, surgery repetition, and prolapse recurrence, biological graft showed similar results than synthetic mesh,<sup>[5,7]</sup> while cadaveric fascia lata had a worse anatomical cure rate.<sup>[5,7,22]</sup> Conversely, AFL showed a good anatomic cure rate, improvement of symptoms, and low complications: furthermore, AFL seems a valid option for treating mesh complications where mesh needs to be removed.<sup>[24,26,27]</sup> According to these data, in our experience, AFL employment showed a good anatomical result from the first to last follow-up. Functional results are reassuring. RSCP with AFL improves urinary symptoms despite we not performed technique aimed to correct urinary dysfunction.<sup>[28]</sup> Robotic surgery also resolved bowel symptoms as described.<sup>[29]</sup> Contrariwise our expectations, sexual function was not improved by surgery although the patient went from POP-q II stage (prevailing anterior defect) to a complete anatomical restitution after treatment. We recorded a mean IOT of 199.2 min (183–230 min), less than other studies.<sup>[20,24,30]</sup> However. IOT of robotic-assisted procedures is higher than laparoscopic, open, and vaginal routes.<sup>[7]</sup>

## CONCLUSION

Robotic SCP is an effective and safe surgical approach to manage vault prolapse with poor blood loss, less day of hospitalization, and reduced morbidity. AFL showed a good anatomic cure rate, improvement of symptoms, and low complications and seems a valid option for treating mesh complications.

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## Conflicts of interest

There are no conflicts of interest.

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