CASE REPORT

The Pudendal Thigh Fasciocutaneous Flap for Vaginal Atresia Reconstruction

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Summary

Vaginal defects can either be congenital or acquired due to tumor or trauma. The reconstructions are aimed in producing a good physical and functional result with the least donor site morbidity. The pudendal thigh flap is a sensate fasciocutaneous flap based on the terminal branch of the superficial perineal artery, the continuation of the internal pudendal artery. Although various flaps have been described for vaginal reconstruction, the pudendal thigh flap offers a very attractive alternative.

Key Words: Vaginal reconstruction, Vaginal atresia, Pudendal thigh flap

Introduction

Vaginal atresia is quite a common congenital abnormality. It has been estimated that the incidence is about 1 in 4000 women. The treatment can either be conservative or surgical. Conservative treatment often ends with frustrating result. One of the surgical options is to use a pudendal thigh flap in vaginal reconstruction. We present two cases of vaginal atresia managed using this surgical procedure.

Case Report

Case 1

A 13 year-old Malay girl presented with a complaint of lower abdominal pain and primary amenorrhea. Physical examination revealed a tender suprapubic mass and imperforate hymen. Ultrasonography was suggestive of haematocolpos. She underwent an exploratory laparotomy in view of the clinical suspicion of adnexal mass. Haematocolpos was evacuated from the upper vaginal. There was no apparent continuity between the uterus and vagina opening. She re-presented again six months later with the same problem. Scarring from the previous surgery, necessitated the upper end of the vagina to be approached via laparotomy for the evacuation of haematocolpos. A vaginal stent was inserted to prevent restenosis of the lower end of the vagina. The stent was removed after two months with normal menses for the subsequent three months. Seven months later she presented again with lower abdominal pain and recurrent haematocolpos. Examination under general anesthesia revealed vaginal atresia with stenotic segment estimated 3 to 4 cm at the lower end. Vaginal reconstruction using the bilateral pudendal thigh flap was performed. In view of the scarring due to previous two surgery, laparotomy was required to gain access to the proximal part of vagina for anastomosis.

Mapping of the superficial perineal artery using a Doppler was done. Two identical flap of 12cm x 4cm dimension was designed (Fig. 1). The incision started at the tip of the flap, deepened through skin and subcutaneous tissue down to the deep fascia on medial and lateral side, sparing the posterior margin of the flap. The flap was elevated with the deep fascia and

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the epimysium over the proximal part of the adductor muscle. Incision of the posterior margin was done with the preservation of the pedicle. Both flaps were elevated as islanded flaps (Fig.2). Two tunnels were created on both lateral vaginal walls underneath the labia majora. Both flaps were transposed into the vaginal cavity and interpolated to create a tube by opposing both sides of the flap using the skin as the internal lining (Fig. 3). The tip of the tube-flap was then stitched to the neck of the uterus as the cervix was not well developed. The distal tube margin was stitched to the introitus. A neo-vagina of 3cm diameter and 7cm length was created. No post-operative stent was required. Examination 3 weeks post-operative revealed the neo-vagina of 3cm diameter and 8.5cm in length. The vagina was in continuation with the uterus. She had her first normal menses after 2 months of surgery. After a year follow-up, she continued to have normal menstrual flow.

Case 2

A 26 year-old nurse presented with primary amenorrhea and monthly abdominal pain associated with breast engorgement. Karyotyping confirmed a 46XX genotype. General examination showed normal female developmental features. Genital examination revealed normal labia but a hypoplastic vaginal opening and a blind-ended vagina. A diagnostic laparoscopy revealed a remnant of uterus adhered to the anterior abdominal wall. Both the ovaries and tubes were normal.

Vaginal reconstruction using the pudendal thigh fasciocutaneous flap was performed. A neo-vagina with the length of 10cm and 4cm diameter was created. The postoperative recovery was uneventful. On further follow-up the vagina has remained patent.

Discussion

Vaginal agenesis is quite a common problem encountered in women. The exact incidence is not well documented but has been estimated about 1 in 4000 women. It is a result of incomplete development and fusion of Mullerian duct. It is usually associated with the absent or maldevelopment of the uterus (75%)

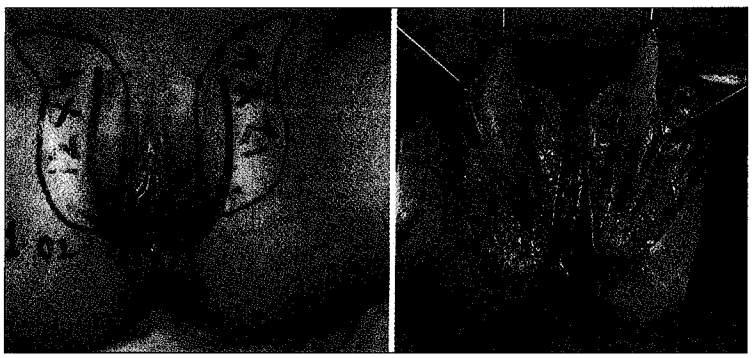

Fig. 1: Right : Pre-operative planning of the pudendal thigh flap.
Left : The dissected bilateral islanded pudendal flap before tubing.

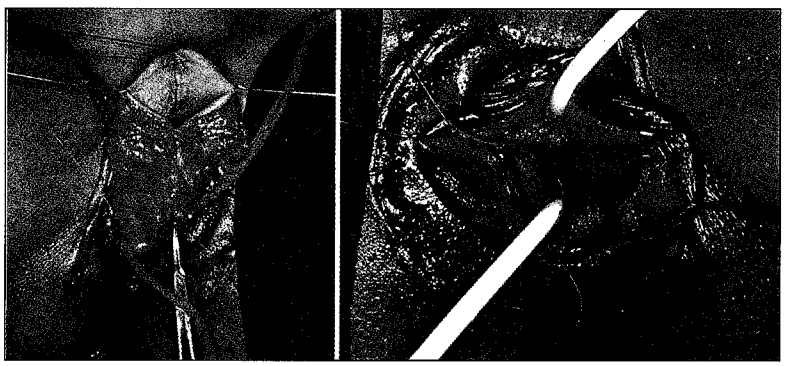

Fig. 2: Right : Tubing of the flap.
Left : Completed reconstructed vaginal canal and introitus.

and with anomalies of the urinary tract. The external genitalia usually appear normal with a blind pouch. Operative exploration of the introitus area should be avoided until definitive surgery as inappropriate incisions or probing may compromise the result of definitive surgery.

The principal of surgical vaginal reconstruction is to create a potential space between the bladder and rectum. Various methods have been advocated for vaginal reconstruction. The earlier methods include the use of large bowel, small bowel, amniotic membrane or split skin graft (McIndoe). The disadvantages of these methods include high donor morbidity, unsatisfactory result and high operative complications.

In the later development, local flap has been used for reconstruction. McCraw et. al. used gracilis myocutaneous flap for vaginal reconstruction. Gordon et. al. described the use of distal rectus abdominis myocutaneous flap[1]. The problems of these flaps are the extent of the donor scar, the difficulty of flap positioning into the pelvic cavity and the risk of incisional hernia. Chen et. al. use the axial subcutaneous pedicle flap from the inferior abdominal wall in 30 patients with better outcome in term of flap volume and no incidence of hernia[2].

The pudendal thigh fasciocutaneous flap was first described by Hagerty et. al. and Wee and Joseph in 1989[3,4]. The flap was based on the terminal branches of the superficial perineal artery. The reconstructed vagina had the natural physiologic angle. Its sensation retained the same innervations of the erogenous zones of the perineum and the upper thigh through the posterior branches of the pudendal nerve and through the perineal rami of the posterior cutaneous nerve of the thigh. These innervations gave the same erotic sensation as the perineum and the upper part of the thigh. The donor site could be closed primarily with an inconspicuous scar hidden in the groin crease.

Classically, the pudendal thigh flap had been used in a bilateral fashion but it could also be used as unilateral flap. There were several reports in the used of this flap in patients with vaginal atresia internationally. The first patient had vagina defect resembling to type IIA Cordeiro classification. She had normal uterus and introitus. She had undergone multiple intervention procedure to correct the deformity. All the procedure had failed. After she underwent pudendal thigh flap, she had normal menses with no local complication. The use of traditional pudendal thigh flap will damage the normal introitus. That was the reason a complete island of the flap was necessary to enable it to pass through the tunnel on both sides of the vaginal wall. The islanded flap also gave a great mobility of the flap.

Monstrey et. al. reported the use of unilateral and bilateral pudendal thigh flap for vaginal reconstruction after oncological resection[5]. They also reported four cases of complex or recurrent rectovaginal fistula surgery using this flap with good anatomical and functional result. The disadvantage of this flap was the presence of hair in the neovagina. The hair growth was more cosmetically unpleasant than of any functional problem. Giraldo et. al. noticed metaplasia and nearly complete atrophy of the hair in the posterior two third of the reconstructed vagina.

Conclusion

We conclude that pudendal fasciocutaneous thigh flap is a versatile reconstructive tool for vaginal reconstruction. It has various advantages over other methods in vaginal reconstruction.

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