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Original Article

Outcomes of Vaginoplasty Using Pudendal Thigh Flap in a Tertiary Care Hospital

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ABSTRACT

Objective: To evaluate the outcomes following vaginoplasty by pudendal thigh flap.
Study Design: Retrospective longitudinal study.
Place and Duration of the Study: Plastic surgery Department, Shifa International Hospital, Islamabad Pakistan, from Jan 2010 to Dec 2021.
Methodology: Vaginal reconstruction was done using bilateral pudendal thigh flap in 20 patients with vaginal defects during eleven years, 2010-2021.
Results: All patients were adults with an age range from 18 to 41 years. Five were married, and 15 were unmarried patients at the time of surgery. Out of the 20 patients, 10(50%) were diagnosed with Mayer Rokitansky Kuster Hauser syndrome, 9(45%) with isolated vaginal atresia and 1(5%) with s/p resection angiosarcoma. The mean vaginal length was 9.0±0.46cm, one year post-operatively. Two patients (10%) developed necrosis of the distal part of the unilateral flap followed by infection, which was managed conservatively, and the other was managed with the McIndoe technique. One patient developed a cutaneous fistula which was excised. All flaps survived completely in the rest of the 19(95%) patients.
Conclusion: Vaginoplasty using pudendal thigh flap was a safe and reliable method for vaginal reconstruction and showed adequate functional and aesthetic results.

Keywords: Mayer rokitansky kuster hauser syndrome, Pudendal thigh flap, Vaginoplasty.

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INTRODUCTION

The absence of a vagina is a cause of functional and psychological stress to the patient. In addition, it adversely affects their social and psychological image. Vaginal reconstruction is indicated in patients with congenital disorders of genitalia, gender affirmation surgery and post-ablative surgery for malignant conditions.[1] The target for reconstruction is creating a neo vagina which is both functionally and aesthetically adequate. The technique to be employed must be simple, reliable and applicable to the majority of the patients. Currently, there is a variety of options available for vaginal reconstruction ranging from skin grafts,[2] local flaps,[3] various intestinal substitutes,[4,5] thigh flaps,[6] and abdominal flaps.[7] Each procedure carries its own merits and demerits. In 1989 Wee and Joseph introduced the use of bilateral Pudendal thigh flaps for vaginal reconstruction. The blood supply of this flap is derived from the branches of the internal pudendal artery, the posterior labial arteries, with the base of the flap located at the level of the posterior end of the introitus.[8] In addition, the posterior labial branches of pudendal nerves and branches from a perineal branch of the posterior cutaneous nerve of the thigh innervate the flap.[1,9] Hence, this flap carries the added benefit of being sensate.

The objective of our study was to document our experience in pudendal thigh flaps for vaginal reconstruction and constitute its functional outcomes. We used the female sexual function index (FSFI) to evaluate the sexual outcome of vaginoplasty.

METHODOLOGY

This retrospective longitudinal study was carried out at the Department of Plastic and Reconstructive Surgery, Shifa International Hospital, Islamabad Pakistan, from January 2010 till December 2021. The study population comprised of 20 patients selected through consecutive sampling technique.

Inclusion Criteria: The adult females with congenital and acquired vaginal defects who had undergone unilateral or bilateral pudendal thigh flaps for reconstruction were included in this study.

Exclusion Criteria: Patients below 18 years, gender reassignment cases and patients who underwent neovaginoplasty using flaps other than pudendal thigh flaps were excluded from the study.

Patients with congenital absence of vagina underwent radiological assessment and gynaecological

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evaluation. Immediate flap reconstruction was done for the patients undergoing tumour surgery. The pudendal thigh flap was elevated in the standard manner as described by Joseph and wee. The flap was designed to be about 15x6cm. The incision started at the distal edge of the flap, going in-depth to the deep fascia bilaterally. The epimysium of the adductor muscle was included in the flap. Posteriorly, the skin and subcutaneous tissue were incised to a depth of 1.5cm and then undermined in a plane parallel to the skin. Mostly we had to de-epithelialise the posterior part of the flap as it was tunnelled. All flaps were islanded and tunnelled under the labia majora. The tube was created by suturing the two flaps together. The neo-vagina was hitched with any remnant pelvic structure depending on the anomaly of the patient. In 4(20%) of the patients, the uterus was present, and neovagina was connected to the cervix.

Post-operative protocols included regulated wound management and manual dilatation. Dilatation commenced about the 14th-day post-surgery. Surgical and functional outcomes were recorded, including donor and recipient site complications. Sexual function was assessed using the Female sexual function index. The female sexual function index (FSFI) is a brief, multidimensional scale to assess sexual function in women.[10] There were about 19 questions in this study, concluding the sexual outcome.

Statistical Package for Social Sciences (SPSS) version 25.0 was used for the data analysis. Quantitative variables were summarized as mean±SD and qualitative variables were summarized as frequency and percentages.

RESULTS

Over 11 years, 20 patients underwent vaginal reconstruction by pudendal thigh flap. The mean age of the patients was 22.15±5.14 (18-41) years. Congenital absence of vagina was present in 19 patients (95%), out of which isolated vaginal atresia was seen in 9(45%) patients, and cases of Mayer Rokitansky Kauster Hauser Syndrome accounted for ten patients (50%). All patients with congenital absence of vagina presented with primary amenorrhoea. Among these patients, 15(75%) were unmarried, and 5(25%) were married. The particulars of the patients were shown in Table.

The mean length of hospital stay was 3.30±1.48 (2-8) days. Out of 20, 19(95%) flaps survived completely. Partial flap loss was reported in one patient on the eighth post-operative day. This patient underwent the McIndoe technique for vaginal reconstruction, which included using a skin graft to recreate the vaginal lining. The patient recovered well. The mean length of the vagina achieved after surgery was 9.00±0.46cm. The donor area was repaired primarily in all cases. Bilateral pudendal flaps were done for all patients with a congenital anomaly.

No micturition or defecation deficits occurred in these patients. All patients had a foley catheter in situ till about two weeks post-surgery. Sixteen out of 20(80%) patients had hair growth in neovagina, but this did not hamper the function of neo vagina. The sensation was analysed by inquiring about the patient and by physical examination. Six patients (30%) were lost to follow-up after the initial post-operative period. The mean length of follow-up time was about 3.6±0.11 months.Post-operative dilatation was commenced at two weeks.

In our study, we used the FSFI to tabulate the outcomes. Only 14(70%) married patients took part in the survey. We individually calculated the score of each domain and then took out the mean score. A score of less than or equal to 26.55 was classified as sexual dysfunction. The mean score of our study was 14.51, with a standard deviation of 0.87. This score signified that neovaginal reconstruction with flaps did not provide the adequate sexual outcome to these patients. These low scores could be attributed to the societal stigma associated with sexual topics.

DISCUSSION

This study aimed to outline the outcomes of vaginoplasty using the pudendal thigh flap in terms of restoration of anatomy and functionality based on the FSFI.

Among the options for vaginal reconstruction, we focused on reconstructing the vagina using the pudendal thigh flap. This fasciocutaneous flap is an axial patterned sensate flap.[11,12] Many studies demonstrated that this technique overcame some disadvantages of other traditional techniques for vaginal reconstruction,[13-15] which is also attested in our patients. It is a fairly straightforward procedure and is completed in 2.5-3 hours with modest blood loss. In contrast to the McIndoe graft technique, there is no significant shrinkage of the neovagina and hence no need for continuous dilatation.[16] Only 2(10%) of our patients had to use dilatation three months post-operative till regular intercourse was commenced. The Singapore flap is a vigorous flap with a stable blood supply, all 19(95%) flaps in this study survived entirely. Out of 20, 16(80%) neovaginas were blind tubes without

communication with the uterus. This compares favourably to the Gracilis myocutaneous flap, which has a perilous vascularity and reports a higher complication rate.[17]

In our study, the mean length of the vagina was about 8.9cm. Loss of vaginal length was noted in 1 patient, and this was secondary to infection. She was managed conservatively in OPD with dressings. Giraldo *et al.*[18] reported the mean vaginal length in their patients to be 9.5cm. Ganatra *et al.*[19] used the same technique and reported easy entry of two fingers with the mean length of the vagina to be 8cm. Ajmal *et al.* used the same technique to reconstruct 19 vagina, and their reported mean length was 8cm.[20]

In the present study, one patient (5%) had an infection, which is comparable with other studies,[15,18] and confirms the reliability of this technique. The pudendal thigh flap has a vigorous blood supply; hence, it is quite a definitive and multifaceted flap for vaginal reconstruction. The vaginal angle is natural and inconspicuous donor site scars.

Only 14 of our married patients took part in the questionnaire. Our mean score was 16.92, which falls in the category of sexual dysfunction. The cause of our low score can be attributed to social taboos in our setup. Women in our society are reluctant to indulge in discussions involving sexual health, as it has always been considered a topic of inhibition.

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CONCLUSION

Neovaginal reconstruction by pudendal thigh flaps is a time-tested technique and has the potential to overcome its few drawbacks further. It is a safe and simple technique with quite favourable outcomes. We hope the sexual functional outcomes can improve through preoperative discussions and regular follow-up counselling with the patients.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

FS & MR: Conception, study design, drafting the manuscript, approval of the final version to be published.

MIK & HR: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

SM & MG: Critical review, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERNCES

1. Tham NL, Pan WR, Rozen WM, Carey MP, Taylor GI, Corlett RJ, et al. The pudendal thigh flap for vaginal reconstruction: optimising flap survival. J Plast Reconstr Aesthet Surg. 2010; 63(5): 826-831. doi: 10.1016/j.bjps.2009.02.060.
2. Bastu E, Akhan SE, Mutlu MF, Nehir A, Yumru H, Hocaoglu E, et al. Treatment of vaginal agenesis using a modified McIndoe technique: Long-term follow-up of 23 patients and a literature review. Can J Plast Surg 2012; 20(4): 241-244. doi: 10.117122307/ 229255031202000416.
3. Windhofer C, Papp C, Staudach A, Michlits W. Local fasciocutaneous infragluteal (FCI) flap for vulvar and vaginal reconstruction: a new technique in cancer surgery. Int J Gynecol Cancer 2012; 22(1) :132-138. doi: 10.1097/IGC.0b013e318234fa0a.
4. Banister JB, McIndoe AH. Congenital Absence of the Vagina, treated by Means of an Indwelling Skin-Graft. Proc R Soc Med 1938; 31(9): 1055-1056.
5. Khulpateea BR, Silver DF. A ten year experience of cecal neovagina procedures for the restoration of sexual function on a gynecology oncology service. Gynecol Oncol 2014; 134(1): 150-153. doi: 10.1016/j.ygyno.2014.04.058.
6. Kaartinen IS, Vuento MH, Hyöty MK, Kallio J, Kuokkanen HO. Reconstruction of the pelvic floor and the vagina after total pelvic exenteration using the transverse musculocutaneous gracilis flap. J Plast Reconstr Aesthet Surg 2015; 68(1): 93-97. doi: 10.1016/ j.bjps.2014.08.059.
7. Soper JT, Secord AA, Havrilesky LJ, Berchuck A, Clarke-Pearson DL. Comparison of gracilis and rectus abdominis myocutaneous flap neovaginal reconstruction performed during radical pelvic surgery: flap-specific morbidity. Int J Gynecol Cancer 2007; 17(1): 298-303. doi: 10.1111/j.1525-1438.2007.00784.x.
8. McQuillan SK, Grover SR. Dilation and surgical management in vaginal agenesis: a systematic review. Int Urogynecol J 2014; 25(3): 299-311. doi: 10.1007/s00192-013-2221-9.
9. Baytekin C, Menderes A, Mola F, Balik O, Tayfur V, Vayvada H. Total vaginal reconstruction with combined 'Split Labia Minora Flaps' and full-thickness skin grafts. J Obstet Gynaecol Res 2007; 33(4): 524-528. doi: 10.1111/j.1447-0756.2007.00575.x.
10. Oakes MB, Beck S, Smith YR, Quint EH, Park JM. Augmentation vaginoplasty of colonic neovagina stricture using oral mucosa graft. J Pediatr Adolesc Gynecol 2010; 23(1): e39-e42. doi: 10.1016/j.jpag.2009.03.006.
11. Avsar AF, Tas EE, Keskin HL, Yeğin GF. Vaginoplasty Using Human Amniotic Membranes A Report of Five Patients. J Reprod Med 2016; 61(9-10): 483-488.
12. Long A, Leroy K, Wong P. Sigmoid Neovagina: A Case Presentation and Pathological Review of Intestinal Transfer. ACG Case Rep J 2019; 6(9): e00220. doi: 10.14309/crj.0000000000000220.
13. Bhaskar V, Sinha RJ, Mehrotra S, Mehrotra CN, Singh V. Long-term outcomes of sigmoid vaginoplasty in patients with disorder of sexual development - our experience. Urol Ann 2018; 10(2): 185-190. doi: 10.4103/UA.UA_88_17.
14. Akbas H, Ustun C, Guneren E, Demir A, Uysal A. The use of an extended groin flap for vaginal reconstruction. Plast Reconstr

Surg 2002; 110(6): 1601-1603. doi: 10.1097/00006534-200211000-00044.
15. Cormack GC, Lamberty BG. The anatomical vascular basis of the axillary fascio-cutaneous pedicled flap. Br J Plast Surg 1983; 36(4): 425-427. doi: 10.1016/0007-1226(83)90121-2.
16. Joseph VT. Pudendal-thigh flap vaginoplasty in the reconstruction of genital anomalies. J Pediatr Surg 1997; 32(1): 62-65.
17. El-Khatib HA. V-Y fasciocutaneous pudendal thigh flap for repair of perineum and genital region after necrotizing fasciitis: modification and new indication. Ann Plast Surg 2002; 48(4): 370-375. doi: 10.1097/00000637-200204000-00006.
18. Giraldo F, González C. The versatility of the pudendal thigh fasciocutaneous flap used as an island flap. Plastic Reconstruc Surg 2001; 108(7): 2172-2174.
19. Ganatra MA, Ansari NU. Pudendal thigh flap for congenital absence of vagina. J Pak Med Assoc 2005; 55(4): 143-145.
20. Ajmal S, Yusuf K. Vaginoplasty with bilateral islanded pudendal thigh flaps. J Ayub Med Coll Abbottabad 2010; 22(1): 1-6.