

TREATMENT OF VAGINAL AGENESIS USING A MODIFIED TECHNIQUE: A FOLLOW-UP HOSPITAL-BASED STUDY

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Abstract

Background: Vaginal agenesis is the most common congenital deformity of female pelvis. The patients with vaginal agenesis present either with primary amenorrhea, cyclical abdominal pain or inability to have intercourse. The study aimed at studying various clinical features of vaginal agenesis. **Materials and Methods:** The present study is a prospective randomized hospital based study in Department of Burns, Plastic and Reconstructive Surgery S.C.B. Medical College, Cuttack carried out from November 2016 to October 2018. In this study female patients from all age groups were included. **Result:** A total of 23 patients were included in our study and mean age in our study was 15.5 years and all the patients in our study were reared as females. In our study 2 patients (8.7%) were married and both of them were presented within 1 year of marriage. The surgical management of the absence of the vagina is a complex problem and constitutes a significant technical challenge. Vaginal reconstruction is critical for maintenance of sexual functioning, psychosocial health, restoration of body image, and for pelvic support to prevent bladder, rectal, and pelvic prolapse. **Conclusion:** The distinct advantages of this flap widen its indications to several other pathologies like vulval neoplasia. It is also an useful addition to the armamentarium of the plastic surgeon for constructing the vagina.

INTRODUCTION

Vaginal agenesis is the most common congenital deformity of female pelvis, the incidence being 1 in 4000–5000 female live births.^[1-4] It may present as an isolated anomaly, i.e., isolated vaginal atresia or as a part of more complex anomalies, with other less common disorders include androgen insensitivity syndrome and inter-sex disorders.^[5,6] The patients with vaginal agenesis present either with primary amenorrhea, cyclical abdominal pain or inability to have intercourse. It causes confusion and anxiety in both the patient and her family regarding her femininity, reproductive function, and sexual life.

The primary goals of vaginoplasty are to relieve the menstrual outflow obstruction and the associated lower abdominal pain; to restore a normal sex life and to preserve the patient's reproductive potential if the patient has a functional uterus and ovaries. Successful vaginal reconstruction should preferably be a single stage, simple, safe and reliable procedure. The neo-vagina should be located in the correct anatomical axis and its wall should have

characteristics of softness, pliability, durability, extensibility and sensibility in the lower part. The morbidity at tissue donor sites should be minimal.^[2,7] There are many surgical and non-surgical techniques described for the formation of a neo-vagina, e.g., Frank-pressure technique,^[8] Mcindoe technique of split thickness skin graft,^[4,9] Horton's vaginoplasty using full thickness skin graft,^[2,10] fasciocutaneous flaps,^[10-12] muscle flaps,^[11] and bowel flaps.^[4,13] The benefits of using well-vascularised tissue in vaginal reconstruction, such as the gracilis musculocutaneous flap and pudendal thigh flaps were recognised as early as 1976.^[14] There is also laparoscopic pedicled omental transfer for creation of neovagina.

The surgical management of the absence of the vagina is a complex problem and constitutes a significant technical challenge. Earlier techniques used were skin grafts, or local skin flaps with various degrees of success. Tissue expanders and vascularized flaps like gracilis myocutaneous flaps were used for more extensive reconstruction. In 1989 Wee and Joseph introduced a new technique using

bilateral pudendal thigh flaps based on post labial artery.

Aims & Objectives

The aim of this study is:

- To study various clinical features of vaginal agenesis
- To evaluate the effectiveness and complications of reconstruction of vagina using perforator based islanded lotus petal flap from posterior labial artery in patients with vaginal agenesis.
- To evaluate its functional and aesthetic outcome.

MATERIALS AND METHODS

The present study is a prospective randomized hospital-based study in Department of Burns, Plastic and Reconstructive Surgery S.C.B. Medical College, Cuttack carried out from November 2016 to October 2018. In this study female patients from all age groups were included. In this study we included all the patients of vaginal agenesis including isolated type, as a part of other complex anomalies or associated with any intersex disorder. Thorough history taking and physical examination were done to find the cause of primary amenorrhea and associated anomalies. Then the necessary investigations such as Karyotyping, ultra sonogram of abdomen, kidneys and pelvis were done to confirm the diagnosis and to find associated anomalies. Then the patients were given counseling regarding the diagnosis and possible treatment outcomes. After the investigations for the anesthetic assessment, surgery was done. Preoperatively the patient was informed and prepared about the flap reconstruction and the postoperative regimen. As these flaps are perforator-based, patients were advised to refrain from smoking. The surgery was performed under either general or regional anesthesia. The patient was placed in lithotomy position and maneuvered further to suit while the resection and reconstruction were performed. The surgery was performed using loupe magnification. The patient was advised to come for review at 2nd week, 3rd month, 6th month postoperatively. The follow up was performed by physical examination and interview. The questionnaire included sexual intercourse, use of lubricant, use of vaginal stent,

abdominal pain, pain during intercourse, orgasm, problems in urination, problems in defecation and vaginal bleeding during intercourse. The proforma for the collection of data was made. All the details of the patient during preoperative, surgical, postoperative and follow up periods were collected and analysed.

RESULTS

In this study 23 patients were treated & followed up, their results critically analyzed & observation recorded.

The above table shows 12 patients belonged to 10 - 15 age group; 11 patients belonged to 16-20 age group. The mean age was 15.5 years. Majority of patients (21 cases) were unmarried and 2 patients (8.7%) were married and both of them presented within 1 year of marriage. In our study one patient was 140cms height; 2 patients were between 141 to 145 cm height; 10 patients were between 146 to 150 cm height; 6 patients were between 151 to 155cms height; and 4 patients were between 156 to 160 cm. The mean height of the patients was 150.6 cm.

The presenting complaints were primary amenorrhea in all 23(100%) patients. 2 married patients (8.7%) complained of pain during coitus. The above study shows majority of patients i.e. 12 cases (52.2%) have absent uterus diagnosed by routine ultrasonography; 9 patients (39.1%) had hypoplastic uterus; and only 2 patients (8.7%) had normal sized uterus. In this present study, 11 patients (47.8%) had detectable anomalies in ovaries and 14 patients (60.8%) had anomalies in fallopian tubes. The operating time was between 110 to 135 minutes. The mean operating time was 123.04 minutes.

The above table showed almost all the cases had undergone surgery without any significant intra-operating complications except in one case which had rectal injury (4.34%). It is evident from the above table that there were no assess of major complications like vaginal stenosis, flap necrosis, infection, and haematoma or keloid formation at donor site. Donor wound dehiscence was seen in 2 patients; hair growth in 2 patients; and one patient complained of dyspareunia.

Table 1: Sociodemographic characteristics of study participants

Characteristics		Number (Percentage)
Age group	10-15 Years	12(52.1%)
	16-20 Years	11(47.9%)
Marital status	Unmarried	21 (91.3%)
	Married	2(8.7%)
Height in cm	140-145m	03(13.04%)
	146-150cm	10(43.47%)
	151-155cm	06(26.08%)
	156-160cm	04(17.41%)

Table 2: Clinical presentation among study participants

Clinical presentation		Number (Percentage)
Chief complaint	Primary amenorrhea	23 (100%)
	Pain during coitus	02 (8.7%)
Size of uterus	Normal	02 (8.7%)

	Hypoplastic	09 (39.1%)
	Absent	12 (52.2%)
	Total	23 (100%)
	Normal	02 (8.7%)
Associated anomalies Adnexa	Ovary	11 (47.8%)
	Fallopian tube	14 (60.8%)

Table 3: Complications among the study participants

		Number (Percentage)
Operating time (in minutes)	110-120	10 (43.47%)
	121-135	13 (56.53%)
	Total	23 (100%)
Intra-operative complications	Rectal injury	01 (4.34%)
	Vessel injury	Nil
	Nerve injury	Nil
	Total	01 (4.34%)
Post-operative complications	Donor wound dehiscence	02 (8.69%)
	Hair growth	02(8.69%)
	Dyspareunia	01(4.34%)
	Infection/haematoma	Nil
	Vaginal stenosis	Nil
	Prolapsed of flaps/flap necrosis	Nil
	Hypertrophic scar or keloid at donor Site	Nil
	Total	05 (21.72%)

DISCUSSION

A total of 23 patients underwent our study. In our study the youngest patient was aged 13 years and the oldest was aged 19 years (mean age 15.5 years). The commonest age of presentation was 15 to 17 years. John A Rock describes the commonest presentation are usually at the age of 14 to 15 years.^[17] Lisa Jane describes the commonest age of presentation are 15 to 18 years.^[18] Primary amenorrhea was the presenting complaint of all 23 patients in our study. John A Rock, Lisa Jane, Peter Oppelt, Tarry W.F and others have stated that primary amenorrhea is the presenting symptom of MRKH syndrome. Sometimes abdominal pain and mass may present the disease earlier than usual age.^[17-20]

Occasional familial occurrence of vaginal agenesis was reported in literature but that was explained by Griffin as could be due to different interpretation. Some cases may be due a hereditary abnormality or may be due to a mutant gene transmission.^[6,21-23] The mean height of the patients was 150.6 cm. The built, stature and nourishment of the patients were found to be normal for their corresponding age group. No patient had webbed neck, tall stature, or features suggestive of Turner's, Klienfelter's or androgen insensitivity syndrome. There was no history of any skeletal anomalies. This is in contrast with other studies which showed an average of 12% skeletal anomalies. Similarly syndactyly, rib deformities, shoulder and pelvic anomalies were described in various studies. Ventricular Septal defects, hearing loss, situs inversus were also reported in literature.^[3,24-27]

All the patients had secondary sexual characters developed. Axillary and pubic hair growth was present. Breast was developed. All the patients had gynaecoid pelvis. External genitalia development was normal. Labia majora and Labia minora were normal. None of the patients had clitoral

enlargement. Vagina was replaced by a dimple measuring 1 to 3 cm. Urethral meatus was normal. None of the patients had features suggestive of intersex such as scrotal or inguinal swellings, clitoral enlargement, or voice change. Other systems and abdomen examination was normal. Vital signs were normal. None of the patients had hypertension in our study.

Karyotyping was done for all patients. (46xx) pattern was found in all patients. Various articles quote that, Karyotyping will be (46xx) for these patients.^[3,18,19] Ultrasound of abdomen and pelvis for evaluation kidney, ureter and bladder region and female genital tract development was done for all the patients.^[11] 11 patients (47.8%) had detectable anomalies in ovaries and 14 patients (60.8%) had anomalies in fallopian tubes, which are more than average percentage quoted in the literature. Female genital tract anomalies were detected more but no urinary tract anomalies were detected in our study, probably because we did not use any MRI examinations or Intra venous pyelogram examinations specifically for urinary tract. Urinary tract anomalies on an average of 32% were reported in the literature.

CONCLUSION

Vaginal reconstruction is essential for maintaining sexual functioning, psychosocial health, and pelvic support. There are many methods of vaginal reconstruction, including serial dilatation, split skin graft, full thickness graft, buccal mucosal graft, and amniotic membrane. Serial dilatation is non-operative and has no morbidity, while split skin graft is the gold standard and carries less morbidity. Full thickness graft prevents contraction of the graft, but carries greater morbidity. The lotus petal flap is a sensate fasciocutaneous flap based on the perforators of the posterior labial artery. It is simple, safe, and reliable, and the reconstructed vagina has a natural

angle and sensate retaining the same innervation of the erogenous zones of the perineum and upper thigh with similar quality of tissue. It is technically slightly more difficult than McIndoe technique and requires more time. It is a useful addition to the plastic surgeon's arsenal for constructing the vagina.

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