

Modified McIndoe and Davydov Vaginoplasty In Patients With Vaginal Agenesis

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ABSTRACT

Objective To compare the modified McIndoe versus Davydov vaginoplasty techniques in terms of complication rates and operative time in patients with vaginal agenesis.

Study design Quasi experimental.

Place & Duration of study This study was conducted in the Department of Obstetrics and Gynaecology Bahawal Victoria Hospital Bahawalpur, from January 2005 to December 2016.

Methodology A total of 60 patients were included in the study after taking informed consent. They were divided in two groups, A and B, with 30 patients in each. After relevant investigations group A underwent modified McIndoe and group B, Davydov vaginoplasty. Patients were followed up to six months postoperatively. Operative time and complications were noted on a form.

Results Mean age of the study participants was 16.34±3.27 year. Mean operative time in group A was 28.80±6.53 minutes while in group B 65.93±14.34 minutes. No patients in group A sustained any injury while in group B, 5 (16.66%) patients had perioperative complications (p=0.02). In group B, 2 (6.66%) patients had bladder and 3 (10%) rectal injuries. In follow up period of six months, 1 (3.33%) patient in group A had partial vaginal stenosis (p=0.313). Functional results of both the groups were satisfactory.

Conclusion Modified McIndoe vaginoplasty is relatively a simple, safe, effective and less time consuming procedure as compared to Davydov vaginoplasty to treat the patients of vaginal agenesis.

Key words Vaginoplasty, Vaginal agenesis, McIndoe vaginoplasty, Davydov vaginoplasty.

INTRODUCTION:

Vaginal agenesis is the congenital anomaly of the female genital tract that has significant physical and psychological affects on the patients. It may occur as a single developmental defect or a part of group of complex anomalies.¹ Vaginal agenesis is estimated to occur 1 in 4000 to 5000 live births.²

It is most commonly associated with Mayer-Rokitansky-Kuster Hauser (MRKH) syndrome and androgen insensitivity syndrome (AIS).² Patients having Mayer-Rokitansky-Kuster Hauser syndrome have normal secondary sexual characters and external genitalia.³ The vaginal agenesis is usually associated with renal (34%) and the skeletal system (12%) anomalies.⁴ The anomalies of renal system may include unilateral absence of the kidney, ectopic kidney, horseshoe kidney, and crossed-fused ectopia and anomalies of skeletal system may include fused vertebrae or other variants.

Patients having vaginal agenesis are usually diagnosed late when they present with primary amenorrhea, mostly at teen age. Vaginal absence has a significant effect on a young woman's life. Thus, in such cases, formation of a functional neovagina is a demand of patient. Although various techniques of constructing a neovagina have been

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described, there is no uniformity of opinion regarding the procedure that should be chosen. The most frequently used methods to develop a neovagina are the non-surgical technique (Frank technique, which relies on serial dilatation of vaginal pouch) and surgical techniques. The purpose of management is not only to create an adequate passage for penetration but also to facilitate satisfactory sexual intercourse. Surgical options include Vecchiotti procedure, Davydov procedure, McIndoe procedure and intestinal vaginoplasty. The first vaginoplasty was performed by Amussat in 1832.⁵ In 1872, Happner was the first surgeon who used split thickness skin grafting for vaginoplasty.⁶ Baldwin used a segment of ilium to create a new vaginal canal in 1927.⁷ The McIndoe procedure was first described in 1938 by McIndoe and Bainster.⁵ Although there are many alternative methods, there is still no consensus regarding the best option for surgical correction. The surgical management of vaginal agenesis is technically challenging. The aim is to create a vagina of an appropriate length, adequate caliber with aesthetic acceptance that facilitates satisfactory sexual intercourse. In this study we aimed to compare the McIndoe versus Davydov vaginoplasty techniques in terms of complication rates and operative time in patients of vaginal agenesis.

METHODOLOGY:

The study was conducted in the Department of Obstetrics and Gynaecology at Bahawal Victoria Hospital Bahawalpur, from January 2005 to December 2016. It included patients of vaginal agenesis with absent or rudimentary uterus exhibiting primary amenorrhea, normal female secondary sex characters and a vaginal dimple without a vaginal orifice. Only those patients who were married or about to get married in near future (within three months of the procedure) were operated and included in the study after informed consent.

A total 60 patients were enrolled. All the merits and demerits of surgical procedures were explained to them and written informed consent was taken. They were then randomly allocated in any of the two groups, group A or group B (both constituting 30 patients each) in such a manner that they match in the confounding variables like age, height and weight. All the patient underwent preoperative work-up that included routine investigations i.e. blood complete examination, urine complete examination, serum sugar, viral markers, abdominopelvic ultrasound and special investigations like karyotyping and diagnostic laparoscopy. Patients and their parents/spouse were thoroughly counseled before operation about the

usual operation time, method as well as possible complications of the surgery. All patients were followed for at least six months after surgery.

Vaginoplasty was done by modified McIndoe technique on patients in group A and Davydov technique in group B. Under general anesthesia in McIndoe procedure, the patient was put in lithotomy position after urinary bladder catheterization. Perineal area was prepared with povidine solution and draped. Before starting the procedure, a first generation cephalosporin was given for prophylaxis. An incision was made transversely just below the vaginal dimple and a space was created in between the urethra, bladder and rectum by blunt dissection, palpating the catheter carefully in front and a finger (of assistant) in the rectum, to guard against the injury. A cavity size of depth of 8-10 cm in length and about 4-5 cm in diameter was achieved. The Douglas pouch represented the upper limit of dissection. Following the meticulous hemostasis of this neovaginum space, the mould was inserted in it. A mould was prepared by 20 ml disposable plastic syringe. It was cut by a sharp blade at 10 cm (approximate length of neovaginum) from the wings of the syringe and wrapped by sofra tullae dressing. Two small holes were created by round body needle of the silk no 1, one on each side of the lateral wing of the syringe. After the insertion of the mould in neovaginum, the labia majora were then sutured loosely with silk No 1 on both sides with the wings of the syringe. Patients were advised to have absolute bed rest. Antibiotics were continued for seven days. Mould was removed on day 8. Vaginal douching was done with pyodine solution and normal saline consecutively. A second mould made with 20 ml syringe wrapped by sofra tullae dressing was kept in place for next two weeks. Patients were discharged after three weeks of the surgery, following removal of mould and urinary catheter. They were advised to insert a homemade mould, a candle of appropriate width covered by condom, supported in situ by pantie, for the whole night on each day for three months. They were further advised to apply 5% xylocaine gel when they remove the mould in the morning.

All the patients were followed for six months. They were called in outpatient department every week for the first month and subsequently at every month. If the patient was married, she was advised to have sexual intercourse regularly three months after the vaginoplasty. Unmarried women were advised after three months, to keep the mould in neovaginum for one hour per day. Six months after surgery, mould was kept in the vaginal cavity for only one hour on

alternate days, until she gets married.

In Davydov method after putting the patient under general anesthesia, a supra-pubic incision was made. As a first step urinary bladder and rectum were separated. On approaching the pelvic peritoneum 100ml normal saline solution was injected into its bottom. Pelvic floor could be seen bulging and separating pelvic peritoneum from the walls. The dissection for the neovagina was done in the same way as in the McIndoe technique. The peritoneum was moved downwards, towards the vestibular incision until it could be seen at the perineum and then opened at the bottom transversely and sutured to the vaginal opening. A purse string suture applied at the vault of the neovagina and the 20 ml syringe vaginal mould was placed in it. Abdomen was closed and the remaining procedure and the follow up was same as in the McIndoe technique till the removal of second mould. Patients in group B were not advised any homemade moulds of candles for whole night as peritoneal lining prevented adhesions. They were advised dilatation with Hegar's dilators daily for three months and on alternate day after three months if not married. Patients in group B were also allowed sexual intercourse after three months. All the observations were recorded in a form and analysed using SPSS. Chi square test was used as a significance test keeping the value of $p < 0.05$.

RESULTS:

A total of 60 patients were included. The mean age and operative time are given in table I. Results were excellent in 30 cases done with modified McIndoe technique (group A), with satisfactory dimensions of the neovagina. No patient sustained significant perioperative complications (table II). Five patients who underwent Davydov vaginoplasty (group B) developed perioperative complications; three had rectal injury, and two urinary bladder injury. All the patients came for regular follow up. All patients

remained compliant with vaginal mould used postoperatively. Clinical examination performed postoperatively revealed neovagina of adequate length and caliber. Only one patient had partial vaginal stenosis in group A. The psychological result was also very encouraging. Thirty-six patients came for follow up after the marriage and reported normal sexual relationships and were satisfied with the depth of vagina.

DISCUSSION:

Vaginal agenesis is a rare anomaly that has serious implication on the sexual life of women. A variety of techniques have been used to address the issue. The Frank's method is non-surgical and its results are unpredictable.⁸ The surgical management of vaginal agenesis constitutes significant reconstructive challenges for the surgeons.⁹ Various techniques have been described. The reconstruction with flaps involves technically complex techniques. These flaps are sensate but bulky and hairy and require larger dissection. Transformation from skin graft to squamous cell carcinoma and from sigmoid to adenocarcinoma has been reported.^{10,11} Additionally vagina made from intestinal graft is not much sensitive and prone to produce more mucous. Patients may have to carry sanitary pads all day long.¹²

Patients in our study were managed with Davydov and modified McIndoe vaginoplasty methods. The aim was to create a functionally acceptable neovagina using the simplest possible technique. Out of different approaches available for vaginal reconstruction, the technique offered by McIndoe has remained the most popular and safest technique for the treatment of vaginal agenesis.^{2,13} The main advantages are high success rates, simplicity and low morbidity. The disadvantages are fistula formation, partial or total obliteration of vagina and need for lubrication. Creation of a neovagina often requires long term use of vaginal retainers to avoid

Table I: Comparison of Age and Mean Operative Time

	Group A	Group B
Mean Age (Year)	19.21±4.2	20.75±5.8
Mean Operative Time (minutes)	28.83±6.53	65.93±14.34

Table II: Comparison of Complications

	Group A	Group B	p- value
Perioperative Complications	0	5 (16.66%) Rectal injury 03 Bladder injury 02	0.02
Vaginal stenosis during follow up	1 (3.33%)	0	0.313

stenosis. The procedure consists of creation of vaginal canal by dissecting the potential neovaginum space that is subsequently covered by materials for canal lining such as full thickness skin graft or amnion. Several modifications of this technique, have been developed.¹⁴⁻¹⁶

Kalpdev used plastic syringe mould with intercede for vaginoplasty.¹⁴ They concluded that innovative surgical procedure comprising of disposable plastic syringe mould wrapped with intercede was more useful and patient's compliance was also satisfactory. We also used the 20 cc disposable plastic syringe mould wrapped with sofra tulla and found it really economical and innovative with reduced operative time and morbidity. Whichever mould is used it should not cause too much pressure on the vaginal walls and must not leave potential space for hematoma formation. Our patients initially used rigid mould of disposable plastic syringe, having capacity in the center for drainage purpose during healing period and after three weeks candle mould was allowed that could be easily inserted and removed. Several authors have documented satisfactory sexual relationships using McIndoe method.¹⁷⁻¹⁹ In our study too there were no significant complications and all married patients reported satisfactory sexual relationships after McIndoe technique.

Davydov procedure was proposed almost 40 years ago but so far there have been very few reports on its anatomical and sexual outcome.¹⁸⁻²⁰ In our study Davydov technique operating time was more and the complication rate was 16%. The operation time reported in other studied was 1-1.5 hours.¹⁸ The reported complications like damage to the bladder and / or ureter, risk of peritonitis and vesico-vaginal fistula formation in other studies range from 5-20%.²¹ In our study modified McIndoe technique with sofratulle was found feasible and reproducible. However to achieve satisfactory intercourse without pain postoperatively, proper and regular use of mould is important till they get married.

CONCLUSIONS:

Modified McIndoe technique with sofratulle is a simple, minimally invasive, less time consuming and effective procedure with low morbidity as compared to Davydov vaginoplasty in women with vaginal agenesis.

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Received for publication: 11-05-2018
Accepted after revision: 30-06-2018
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Author's Contributions:
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Joveria Sadaf: Drafting and revising.
Naheed Fatima: Manuscript writing and data collection.
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Conflict of Interest:
The authors declare that they have no conflict of interest.
Source of Funding:
None
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How to cite this article:
Yasmin S, Sadaf J, Fatima N. Modified McIndoe and Davydov vaginoplasty in patients with vaginal agenesis. *J Surg Pakistan.* 2018;23(2):55-59. Doi:10.21699/jsp.23.2.4.
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