Egypt, J. Plast. Reconstr. Surg., Vol. 36, No. 1, January: 19-24, 2012

Functional Outcome after McIndoe Vaginoplasty

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ABSTRACT

Background: Mullerian agenesis represents a challenge to reconstructive surgeons. In order to create a new vagina that mimic the normal one in size, lining and appearance, multiple techniques were designed; among these techniques Mc Indoe vaginoplasty represents the simplest one with good results.

Patients and Methods: Nine patients with mullerain agenesis underwent Mc Indoe vaginoplasty, they were followed for 43.8±17.9 months, and both their functional and anatomical results were recorded and compared with a control group of normal females.

Results: Patients treated by Mc Indoe vaginoplasty showed high success rate for creation of vagina that were approximately similar to normal one in size (length=11.4±1.58 and diameter =3.72±0.87), functionally their sexual satisfaction measured by FSSI were the same as in normal female (27.32±4 versus 28.78±3).

Conclusion: McIndoe procedure is a successful operation for creation a functionally and anatomically accepted vagina.

INTRODUCTION

Mullerian agenesis is a rare but crippling anomaly; its incidence is varied from 1:4000 to 1:10000 **[1-3]**. If it is left untreated, there will be sexual inability and patients may develop severe psychological problems **[4-6]**. Numerous procedures were described for creation of neo-vagina with acceptable function, feeling and appearance **[7]**. They included serial dilation **[8,9]**, Vecchietti's technique **[10-12]**, sigmoid or ileal flaps **[13-18]**, gracilis flap **[19]**, Singapore flap **[20,21]**, and expanded vulval flap **[22]**. Among these options the modified Mc indoe technique gained popularity being the simplest operation with very low donor site morbidity **[23,24]**.

Long-term changes in neovagina created by this technique were area of interest in researches regarding anatomical, histological, chemical, bacteriological and sensory condition **[4,25,26]**. In this study we will evaluate functional and anatomical outcome of the patients subjected to this technique.

PATIENTS AND METHODS

This prospective study included nine patients with mullerian agenesis to whom modified McIndoe vaginoplasties were done in Plastic and Gynecology Departments, Zagazig University Hospital from June 2004 to March 2010, after it has been proved by the University review committee. Patients' ages were ranged from 18 to 27 years (mean 23.11± 3.01), for functional assessment of neo-vagina unmarried patients were excluded from the study. Regarding to educational level, four cases had some primary education, and the rest had mid level education. None of our patient was receiving psychiatric medication for any other causes. All patients have vaginal bite smaller than 1cm. Comprehensive, clinical examination, hormonal assay, Karyotype studies, radiological evaluation (ultrasonography & CT) and diagnostic laparoscopy if needed were done to confirm diagnosis and detection other associated anomalies.

Mayer-Küster-Rokitansky-Hauser syndrome (MKRHS) was the final diagnosis of all cases. Modified McIndoe operations were done as described in previous articles **[20]**; through a transverse incision an average thirteen centimeter pouches were created between the urethra & bladder anteriorly and the rectum posteriorly, after careful hemostasis these pouches were covered with partial thickness skin graft over a soft moulds (Figs. 1,2,3). After surgery patients were kept on low residue diet until the first dressing which was done five days after surgery. During this dressing, neo-vagina was washed by normal saline, grafts taking were reported (Fig. 4), and moulds were washed and returned back to the neo-vagina patients were instructed to keep the mould in place continuously for at least three months, and it was removed only for washing. Patients were followed every other day till the complete epithelialization of pouches, then every month for one year, then every three months thereafter, the mean follow-up period was

43.8±17.9 months. During this visits, vaginas were inspected for bleeding, discharge, stricture, granulation and any morbidity. Sexual intercourse was allowed and encouraged one to two months after the operation according to the percentage of graft taking.

One year after the operations the final dimensions of the neo-vaginas were measured, after using a proctoscopy. Functional assessments of neo-vaginas were done at the same time using female sexual function index (FSFI). FSFI is a reliable self assessment questioner contains nineteen items measures the six basic component of sexual function (desire, arousal, lubrication, orgasm, satisfaction and pain), the total score range from 2 to 36. For comparative purpose other nine healthy females were asked to fill same questioner.

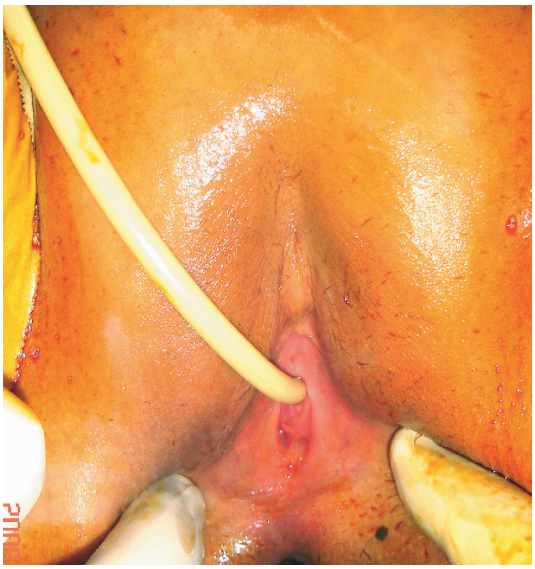

Fig. (1): Preoperative photo with shallow vaginal depression.

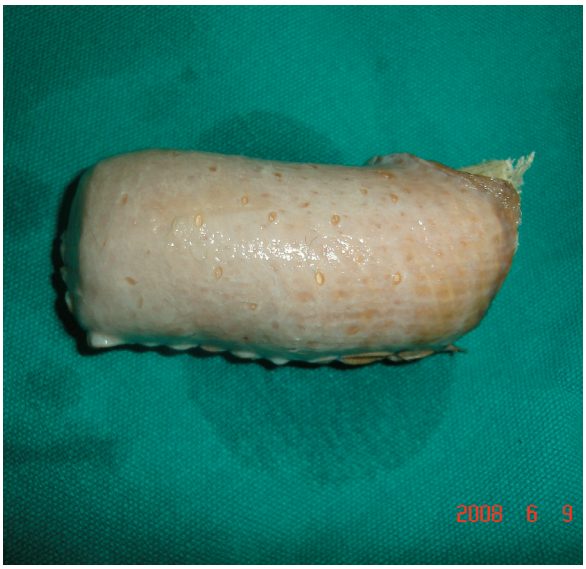

Fig. (2): Skin graft is wrapped over the mould with raw surface out.

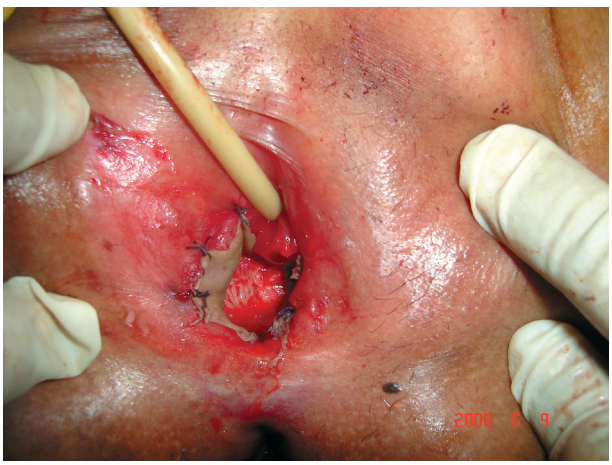

Fig. (3): Intraoperative photo of new vagina.

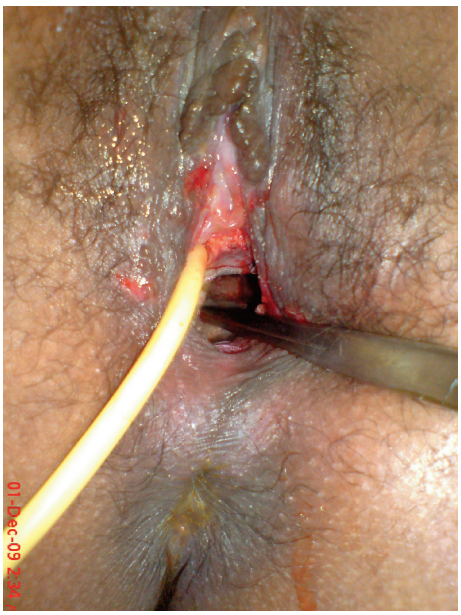

Fig. (4): Early postoperative photo after removal of mould with good vaginal size.

RESULTS

All patients recovered well without mortality, injury to surrounding structure, or any early post-operative complication apart from discomfort due to closure of labia over the mould and pain of the graft donor site which is managed well by paracetamol.

Average grafts' taking at the first dressing was about 80% of their size. By the end of fourth week, the whole surfaces of the pouches were completely epithelialized under conservative treatment (debridement of nonviable graft, washing with saline and antibiotic). The average hospital stay was 13±2.1 days. Epithelialization of donor site took 19±3.6 days, without keloid or hypertrophic scar formation.

By the end of the first year patients had vagina with acceptable size (length=11.4±1.58 and diameter=3.72±0.87), an average of one sexual intercourse every week was obtained.

Only one patient developed stenosis, this patient was not strictly adherent to regular mould application and sexual intercourse owing to a family problem.

All husbands ratified their sexual relation as satisfactory but owing to our culture which does not allow multiple partners, comparative evaluation of their satisfaction was not possible.

Three patients had good sexual function (FSSI ≥30), five patients have satisfactory functions (FSSI ≥23) and in one patient the function was poor (FSSI <23). The mean FSFI score for patients was 27.32±4 out of 36 while it was 28.78±3 in control group. Paired *t*-test showed that the difference between two groups was statistically insignificant.

The results of individual domains of FSFI are shown in Table (1). In spite of the apparent differences between both groups particularly in pain domain, these differences were statistically insignificant.

Table (1): Results of individual items of FSFI.

	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total
Patients	4.13±0.76	4.53±0.97	4.6±0.92	4.66±0.69	4.84±0.90	4.54±0.94	27.32±4
Control	4.26±0.63	4.56±0.85	4.8±0.6	4.84±0.5	5±0.66	5.28±0.67	28.78±3
Paired *t*-test	$p>0.05$	$p<0.05$	$p>0.05$	$p>0.05$	$p>0.05$	$p>0.05$	$p>0.05$

DISCUSSION

Creation of new vagina with acceptable and durable size, soft and moist lining as well as aesthetically blessing shape with low morbidity is the target of all reconstructive surgeons in management of mullerain agenesis **[23]**.

For this target, multiple techniques were described ranging from simple skin graft lining for surgically created pouch, **[27,28]** to more complex procedures that entail laparotomy and intestinal resection, **[13-18]** or harvesting flaps with technical difficulties and lengthy operations **[19,20,21,29]**.

Among these techniques modified McIndoe, by far representing the simplest one with least morbidity, **[30,31]** makes it the procedure of choice in USA **[32,33]**. This low morbidity is also supported by our results where no one of our patients reported any complication that needs surgical intervention (apart from debridement) or a complication that has long term sequel.

McIndoe technique not only has minimal complication, but also we noticed that it can create a neo-vagina that anatomically and functionally mimic the normal one. Regarding anatomical aspect the average size of the vagina that obtained in our study was 11.4cm in length and 3.72cm diameter, which approximately the same as it was in other studies using the same technique, **[30,31]** and in all this studies the dimension of new vagina was approximately similar to that of normal vagina **[34-37]**. This similarity of neo-vagina to the normal one extended to include the epithelial lining **[4,38]**.

Although most of study reported a high success rate of Mcindoe procedure to restore normal sexual function which varied from 75% in some series up to 100%in other studies **[39-48]**, yet none of them used a specific surveying scale to accurately assess the whole sexual satisfaction **[49]**. Instead of that, most of these studies relied only on the presence of lubrication and orgasm or absence of pain as an indicator of sexual function **[13,31,50,51,52]**.

Since Rosen introduced his sexual index more than decade ago **[53]**, little number of studies utilized it to assess the sexual function after vaginoplasty, among these studies McIndoe procedure was not the elected technique **[54-57]**.

The mean FSSI scores in patients group and in normal females were approximately the same, although there was an apparent difference in pain

domain, yet it does not reach the level to be significant. Explanation of this similarity in FSSI score comes when we understand the physiology of sexual function which is a complex mechanism that requires harmony between involved hormones **[58]**, prefrontal cortex and limbic system **[59]**, emotions **[60]**, and finally triggered by intact genital structure including clitoris, vagina, urethra, periurethral gland, and pelvic muscles **[61]**, the only defect in patients with MKRHS is the absence of the vagina while other genital structure are intact **[62]**. Moreover, Vesanović and associates had studied different stimuli to the neo-vagina that reconstructed by McIndoe technique after one year in twenty one patients, and compared it with sensory status of vaginas of normal females, and they demonstrated appearance of the types of sensations (touch, warmness, coldness) which were as same as that founded in normal females **[25]**. While the apparent difference in pain domain could be attributed to peno-vaginal disproportion in the case that was not stick to regular dilation, and this finding emphasis on the value of strict postoperative dilation.

Husbands of our patients mentioned that they had a satisfactory peno-vaginal penetration, although we did not compare this relation with a normal female without vaginal agenesis, but in other studies male partners found no difference between their current operated females and other women without anomaly **[63,64]**.

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