

REVIEW ARTICLE

META-ANALYSIS : COMPARISON OF NEOVAGINA SUCCESS RATE WITH VECCHIETTI'S LAPAROSCOPIC METHOD AND DAVYDOV'S LAPAROSCOPIC METHOD IN MAYER-ROKITANSKY-KUSTER-HAUSER SYNDROME (MRKH) PATIENTS

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ABSTRACT

Background: Mayer-Rokitansky-Kuster-Hauser Syndrome (MRKH) is caused by an embryological growth disorder of the mullerian duct. Laparoscopic Vecchietti and Davydov are laparoscopic surgery techniques that are often used for neovaginal surgery. **Objective:** This study aimed to compare the success rate of neovagina with the Vecchietti laparoscopic method and Davydov's laparoscopic method in patients with Mayer-Rokitansky-Kuster-Hauser Syndrome (MRKH). **Methods:** A systematic data search was performed on a medical database (PUBMED, MEDLINE, Cochrane Database, Google Scholar). Inclusion criteria: (1) randomized study of the Vecchietti Laparoscopic Method with Davydov's Laparoscopy, (2) all inclusive papers can be accessed completely, and (3) the data obtained can be accurately analyzed. **Data acquisition and analysis:** We searched for a random blind study (RCT) with the following keywords: (1) Vecchietti Laparoscopy [title] AND (2) Davydov's Laparoscopy [title] AND Mayer-Rokitansky-Kuster-Hauser syndrome [title]. **Results:** Three RCTs comparing neovaginal success with the Vecchietti laparoscopic method and Davydov's laparoscopic method a total of 122 patients were analyzed. Average vaginal length (mean difference [MD] -0.70, and 95% [CI] -0.99 to -0.41 (P <0.00001), Average number of Female Sexual Function Index scores (mean difference [MD] -1.34, and 95% [CI] -1.71 through -0.96. (P <0.00001). **Conclusion:** This meta-analysis concludes that Davydov's Laparoscopic Method is better in terms of postoperative vaginal length and the Female Sexual Function Index Score

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INTRODUCTION

Mayer-Rokitansky-Ku'ster-Hauser syndrome (MRKH) is an embryological growth disorder of the mullerian ductus which results in no uterine formation and/ or 2/3 of the vaginal area in women with normal secondary sex growth and normal karyotyping 46, XX. This syndrome is found 1 every 4500-5000 women ¹.

Mayer-Rokitansky-Ku'ster-Hauser syndrome (MRKH) consists of two types. Type 1 is MRKH type that does not form the uterus and vagina completely (Rokitansky

sequence). Whereas Type 2 is a type of MRKH that does not form the uterus and vaginal perfectly and is accompanied by other malformations (MURCS association). Patients with MRKH syndrome usually present with complaints of never having menstruation with a physical examination showing normal secondary sex growth but a dead end vagina. Investigations can be done in the form of transabdominal ultrasound, MRI, or karyotyping. Transabdominal ultrasound and MRI are performed to evaluate the uterus, vagina and abnormalities in the urogenital

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tract. In karyotyping patients with MRKH syndrome, the phenotype XX is obtained. This is needed to distinguish between Androgen Insensitivity Syndrome^{1,2}.

Differential diagnosis of MRKH syndrome includes vaginal atresia, WNT 4 syndrome, Androgen Insensitivity Syndrome. The difference between MRKH syndrome and vaginal atresia is that the uterus and the upper part of the vagina are found, whereas in WNT 4 syndrome and Androgen Insensitivity Syndrome, there is testicular or masculinized ovary and XY phenotype³.

The major issue in these patients (MRKH) is vaginal agenesis, which affects sexuality and alters quality of life. Classic vaginal agenesis management is to create a cavity that allows satisfying painless penetrative intercourse. Vaginoplasty can be achieved either surgically or by progressive dilation of the vaginal dimple. Most surgical or nonsurgical techniques are reported to provide good anatomical and functional results of at least 70%.

The first management of MRKH syndrome patients is patient and family counseling about the patient's condition and plans for making neovagines for the patient's sexual needs. Making neovagina can use non-operative methods and operative methods. The non-operative method consists of the Frank method, a method with a vaginal dilator. Operative methods include the Vecchiatti, McIndoe, and Davydov methods⁵.

Surgery is a choice for women who are unsuccessful with dilators or who prefer surgery and after a thorough discussion about advantages and disadvantages of various neovaginal techniques. It is very important for patients to realize that surgical procedures she still needs to use a vaginal dilator in the postoperative period to avoid stricture or stenosis. Classically, Vecchiatti surgery is an abdominal procedure performed through a Pfannenstiel skin incision; However, it has been modified into the laparoscopic approach. There is limited data because this is a relatively new technique. Another laparoscopic

approach is the adaptation of Davydov's procedure. The Davydov laparoscopic technique is a three-stage operation which includes dissection of the rectovesical space, mobilization of the peritoneal abdomen to make vaginal division, and adhesion of the peritoneum to the introitus.

New surgical methods have recently been developed in which laparoscopy has replaced traditional surgery. Because of it, this study analyzed which presents the most advantages.

We chance to compare the two techniques in terms of sexual satisfaction and effectiveness (vaginal length), which affects sexuality and alters quality of life in a relatively large cohort of patients with Rokitansky syndrome. This syndrome has been treated by a wide variety of techniques proposed for the creation of a neovagina, demonstrating that the inventiveness of the gynecologic surgeons is infinite, and that the ideal procedure still has to be found. Therefore, this study compares the only and we believe two techniques (with a laparoscopic approach) constitute a desirable combination of minimal invasiveness and good results, and can be considered in developing country especially in Indonesia.

METHODS

Data Search Strategy

A systematic literatures search were carried out using PUBMED, Google Scholar, and the Cochrane Central Register of Controlled Trials to obtain randomized randomized studies (RCTs) in the span of the year 2010 to 2020, using keywords: (1) Mayer-Rokitansky-Ku"ster-Hauser; (2) Vecchiatti Laparoscopy and Davydov Laparoscopy

Inclusion Criteria

The following criteria had been used in the selection: (1) randomized and observational randomized observations of the Vecchiatti Laparoscopy and Davydov Laparoscopy in patients with Mayer-Rokitansky-Ku"ster-Hauser (2) all inclusive

papers are completely accessible, and (3) all the data were obtained, can be analyzed accurately.

Study Quality Assessment

The authors independently assessed the validity of each study using the criteria stated in the Cochrane Handbook for Systematic Reviews of Interventions⁶. Each study was grouped and assessed according to quality categories: A, studies have a low risk of bias; B, studies have a high risk of bias, or C, studies have unclear risk (unclear risk of bias).

Data Extraction

Data extraction was carried out to obtain the objectives, objectives and research questions of this study. Clinical outcomes compared were expected vaginal length and patient FSFI score.

Statistical Analysis and Meta-Analysis

Meta-Analysis was compiled using Review Manager (RevMan) version 5.3. (Cochrane Collaboration, Oxford, UK). Mean difference (MD) is derived from averages and standard deviations and is used when results are reported using an identical scale. When the scale was used differently, standard MD (SMD) was calculated using RevMan. The confidence interval used is 95%.

RESULTS AND DISCUSSION

Study Selection

Searching data on PubMed and Google Scholar returned 538 articles. Screening based on the inclusion criteria described previously, a total of 3 articles were included for meta-analysis. The screening and selection process is illustrated using a study selection flowchart (Figure 1).

Study Characteristics

The characteristics that comparing intervention of the Vecchietti laparoscopic method and the Davydov laparoscopic method are summarized in table 1.

Number of Samples

Our study included three articles which included 122 patients with Mayer-Rokitansky-Ku'ster-Hauser syndrome (MRKH) who made neovagina. A total of 59 patients underwent the Vecchietti laparoscopic methods and 63 Davydov's laparoscopic methods.

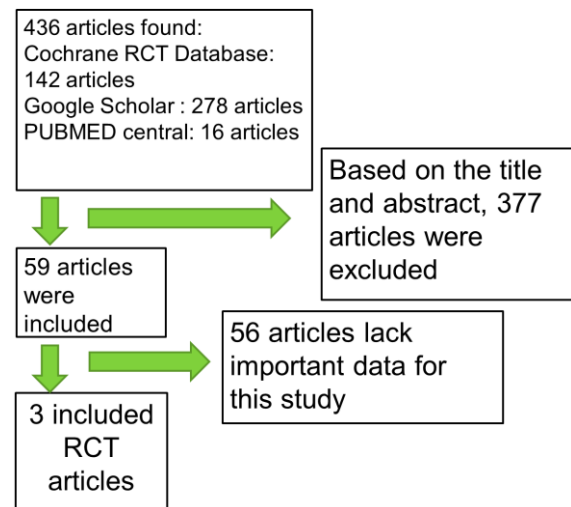


Figure 1. Study selection flowchart

Design study

All three studies from Alaa et al, Bianchi et al, and Dong X et al are retrospective cohorts.

Follow-up time

The three studies from Alaa et al, Bianchi et al, and Dong X et al were followed up for at least 1 year after neovaginal measures.

Risk of bias

We have explicitly assessed whether related studies have a high risk bias based on the criteria stated in the Handbook⁶. An assessment of the risk of bias from each study can be seen in Figures 2 and 3. Based on the assessments, it can be concluded that the related studies have a low risk bias.

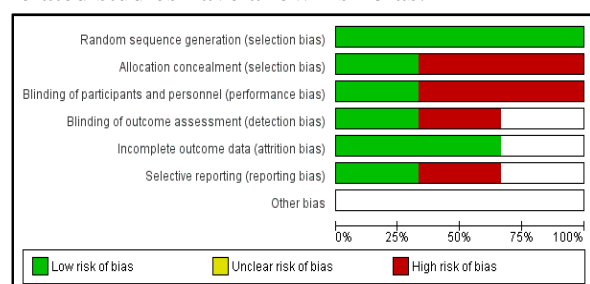


Figure 2. Conclusions from risk stratification bias in all articles in this meta-analysis.

	Alaa 2018	Bianchi 2011	Dong 2015	
Random sequence generation (selection bias)	●	●	●	
Allocation concealment (selection bias)	●	●	●	
Blinding of participants and personnel (performance bias)	●	●	●	
Blinding of outcome assessment (detection bias)	●	●	●	
Incomplete outcome data (attrition bias)	●	●	●	
Selective reporting (reporting bias)	●	●	●	
Other bias				

Figure 3. The risk assessment of the author's bias against each article involved.

The meta-analysis was compiled using Review Manager (RevMan) version 5.3. (Cochrane Collaboration, Oxford, UK). This paper assesses the comparison of neovagina success rates with the Vecchietti laparoscopic and Davydov laparoscopic methods by assessing vaginal length and FSFI score^{6,7}. We use fixed-effects and random-effects Meta-analyzes for data combinations that can be logically assumed that several studies estimate the same therapeutic effect.

Strengths and limitations

The strength of our study was its methodology. We exclude other cases of vaginal agenesis, as MRKH syndrome, vaginal

significant impact on quality of life, independently from the absence of vagina. Study reported that vaginal aplasia had a higher psychological impact in MRKH syndrome patients. The accuracy of our results was supported by the use of validated quality of life questionnaires and the standardized pelvic exam performed by an independent evaluator.

Some limitations at the level of our review should also be highlighted. We pooled studies with, to a limited extent, heterogeneous stage and intervention methodology. In our studies, 122 patients were treated with laparoscopic surgery, 59 with Vecchietti's method and 63 with Davydov's method which cannot describe the actual results, so it can't be a base for recommendations. Future research and study is still needed, with a larger sample of patients.

Interpretation

Our results from comparing neovaginal success with the Vecchietti laparoscopic method and Davydov's laparoscopic method with a total of 122 patients were analyzed. From Davydov method average vaginal length 0,7 cm longer with range 0,41-0,99 cm (see Figure 4). This analysis shows, Davydov's

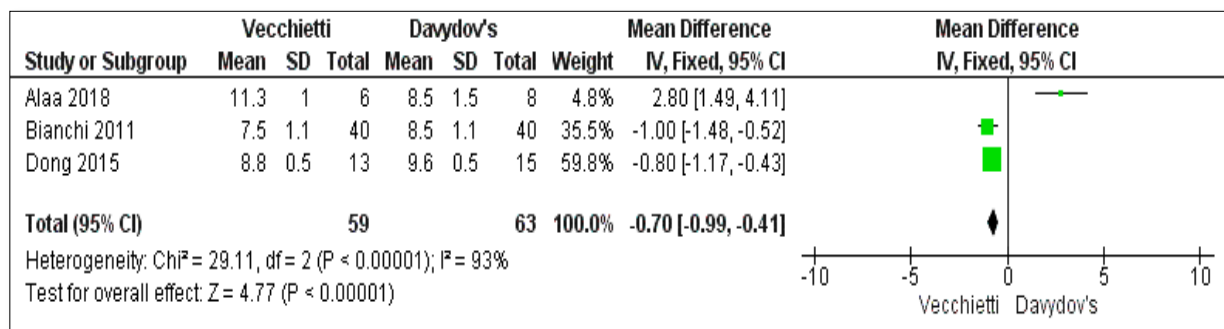


Figure 4. Forest plot showing a comparison of clinical outcomes for vaginal depth

dimples may be different from those of complete androgen insensitivity syndrome patient in terms of embryologic development. Moreover, a 46, XY karyotype may have a

laparoscopic method has a better success rate in terms of clinical outcome from the depth or length of the vagina than Vecchietti's laparoscopic method (P < 0.00001).

Table 1. Study Characteristic

Reference	Year	Country	Study Design	Inclusion Criteria	Intervention	Outcome
Dong X, et al, 2015	2015	China	Retrospective Cohort Study	All women diagnosed with MRKH syndrome aged > 18 during January 2010 - December 2013	Neo-vaginal Method with Vecchietti Laparoscopy and Davydov Laparoscopy for Patients with MRKH Syndrome	Operation outcome, Vaginal length, sexual quality with FSFI standardization
Bianchi S et al, 2011	2011	Italy	Retrospective Cohort Study	Women with MRKH syndrome aged > 18 years who underwent neovagina procedures from October 2003 to August 2008.	Neo-vaginal methods with Vecchietti Laparoscopy and Davydov Laparoscopy for Patients with Vaginal Agenesis	Operation outcome, Vaginal length, sexual quality with FSFI standardization
Alaa, et al, 2018	2018	France	Retrospective Cohort Study	Patients included exclusively MRKH syndrome patients aged > 18 years, who began management of Agenesis Vagina from year 1995 until 2015. Evaluation by an independent and experienced single gynecologist	Comparing dilatation and surgical techniques in patients with vaginal agenesis in Mayer-Rokitansky-Kuster-Hauser syndrome, assessed in terms of quality of life, outcome of operations, and complications	WHO Quality of Life Instruments as well as FSFI and FSDI Scale (quality of sexual life) Group: dilation therapy, surgery and sexual Intercourse

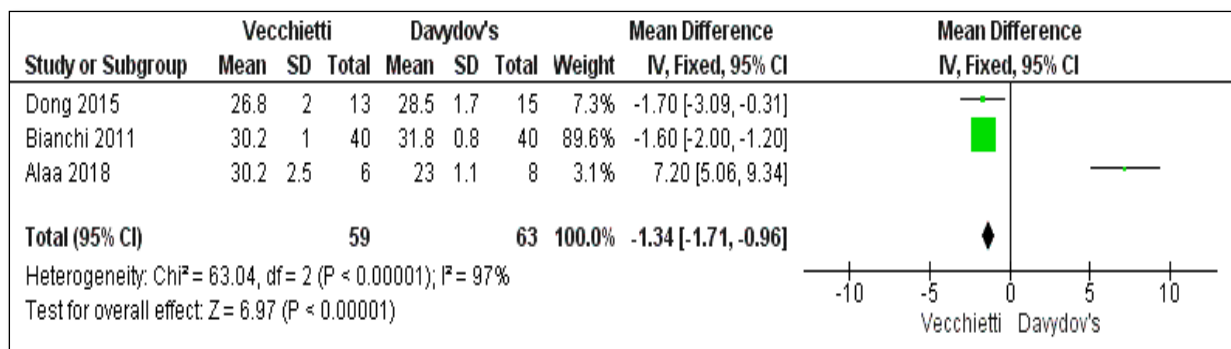


Figure 5. Forest plot showing the comparison of sexual satisfaction (FSFI score)

We obtained FSFI score results from total 122 patients, with 59 patients were treated by Vecchietti's laparoscopic method and Davydov's laparoscopic method in 63 patients. The Davydov's average number of Female Sexual Function Index score was 1,34 point better with range 0,96 – 1,71. Figure 5 shows Davydov's Laparoscopic method has a significant difference in patient sexual satisfaction in terms of FSFI score ($P < 0.00001$).

SUMMARY

This study concludes that Davydov's Laparoscopic Method is better, in terms of postoperative vaginal length, and sexual satisfaction (Female Sexual Function Index – FSFI). Davydov's laparoscopic method can be considered as the therapeutic choice of laparoscopic surgery in MRKH patients. Although further research and study is still needed with a larger number of samples to be a recommendation for future therapy

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