

Vaginal delivery combined with vaginal tightening surgery and perineal body repair

5 case reports

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Abstract

The present study aimed to investigate the feasibility of vaginal delivery combined with vaginal tightening surgery and perineal body repair.

From January 2017 to April 2017, 5 cases underwent vaginal delivery combined with vaginal tightening surgery and perineal body repair. We retrospectively analyzed the clinical data.

The incisions of 5 cases were all primary healing; vulva form was improved, and there were no postoperative hematoma, infection or vaginal mucosa prolapse. Sexual function was improved to different degrees. The pelvic muscle force test showed that both the type I and type II myofiber scores were increased.

It is feasible to perform vaginal delivery combined with vaginal tightening surgery and perineal body repair, which is a safe and effective method for improving sex life and pelvic floor function.

Abbreviation: PFD = pelvic floor dysfunction.

Keywords: perineal body repair, vaginal delivery, vaginal tightening surgery

1. Introduction

Vaginal tightening surgery is a common female plastic surgery along with perineal body repair. The implementation of vaginal delivery combined with vaginal tightening surgery and perineal body repair can lessen the postpartum pain of patients undergoing re-operation and shorten the long recovery period. Patients are relatively receptive to this method. However, since postpartum vaginal tissues have certain particularity due to the effect of environment during pregnancy, the report on this surgical method has been rarely seen at home and abroad. In this paper, we analyzed 5 patients receiving vaginal delivery combined with vaginal tightening surgery and perineal body repair so as to explore and summarize the feasibility of this operation.

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2. Materials and methods

2.1. General information

A total of 5 patients were included in the study, who voluntarily underwent vaginal delivery combined with vaginal tightening surgery and perineal body repair in obstetrical department of first affiliated hospital of Tsinghua University from January 2017 to April 2017. The study was approved by the Ethic committee of The First Affiliated Hospital of Tsinghua University. The written informed contents were obtained from all the 5 patients.

All 5 patients complained of unsatisfying sex life characterized by different degrees of vaginal relaxation, including 4 cases with moderate relaxation and 1 case with severe relaxation. The perineal body area collapsed, and perineal body was 1.5 to 2.3 cm in height. The cases were aged 28 to 39 years old with the second vaginal delivery, including 3 cases suffered from lateral episiotomy and 2 cases suffered from perineal laceration in the first vaginal delivery. Perineal laceration frequently occurred during vaginal delivery. There are typically 4 categories of perineal lacerations: first-degree: defined as superficial tears confined to the epithelial layer; second-degree: extending into the perineal body but not into the external anal sphincter; third-degree: involving superficial or deep injuries to the external anal sphincter; fourth-degree: extending throughout the rectal mucosa.^[1] In the second vaginal delivery, second-degree laceration of perineal body occurred in 2 patients, and first-degree laceration occurred in the other 3 cases. Pelvic muscle force was tested and scored using MaiLanDe pelvic surface myoelectricity analyzer in 37 to 38 weeks of gestation and 2 months postpartum, respectively. Acute inflammation of genitals, postpartum hemorrhage, and blood coagulation dysfunction were all eliminated.

2.2. Vaginal relaxation criteria^[2]

Two or more fingers (girth about 8 cm) easily going into vagina were identified as relaxation. It is divided into the following

degrees: 3 fingers (girth about 10 cm) constrainedly going inside were determined as mild relaxation; 3 fingers easily going inside and 4 fingers (girth about 13 cm) constrainedly going inside were considered as moderate relaxation; 4 or more fingers easily going into vagina were determined as severe relaxation.

2.3. Pelvic muscle force test

In present study, muscle forces of pelvic floor myofibers of the subjects were tested using MaiLanDe pelvic surface myoelectricity analyzer in 37 to 38 weeks of gestation and 2 months postpartum, respectively. Pelvic floor muscles are the muscles that seal the pelvic floor. Pelvic floor myofibers were divided into 2 types. Type I myofibers include pubovaginalis, 70% of puborectalis, 90% of pubococcygeus, illiococcygeous muscle, and 68% of ischiococcygeus, which were characterized by tetanic contraction, durability and indefatigability with average value more than 35 μ V and variability less than 0.2. Type II myofibers contained bulbospongiosus, ischiocavernosus, superficial transverse muscle of perineum, and external sphincter muscle of anus, which were featured by periodic contraction, speediness, transience, and fatigability with maximum value more than 40 μ V, rise time less than 0.5 seconds, and recovery time less than 0.5 seconds. The test results were then scored.

2.4. Surgical method

Subjects were given the questionnaire package to complete before the surgery, and they were told that they could resume coital sexual activities 6 to 10 weeks postoperatively, as determined by their surgeon. Besides, all subjects have completed the instruments and all data were entered into a research database. After delivery of the placenta, operation was performed in accordance with the degree of vaginal relaxation. The 1/3 to 1/2 arc incision in posterior vaginal wall was designed at 0.3 cm position outside hymenal caruncles. Then, the mixture of 0.5% lidocaine and 1/20 million units adrenaline was injected into vaginal submucosa for local anesthesia. Vertical incision was conducted on vaginal mucous membrane until submucosa, followed by 4 to 5 cm blunt and sharp dissection along submucosa. After bipolar coagulation hemostasis, basal muscularis was separately sutured using 2-0 absorbable sutures from inside to outside. The inserting depth of needle was checked to avoid damaging anal canal. To the outermost layer, submucosa and muscularis were stitched by purse string suture with 1 cm interval. Suture was done from inside vagina to vaginal orifice, and the sutured vaginal mucosa showed vertical and horizontal folds. The medial mucosa edge of vaginal incision was relatively stitched using 5-0 absorbable sutures which were then left inside vagina, and the lateral side of mucosa edge was relatively stitched left and right after proper pruning. Newly formed vaginal orifice was supposed to barely accommodate 3 fingers (girth about 10 cm). The lacerated muscularis of perineal body was discontinuously stitched using 2-0 absorbable sutures via ladder type. To strengthen the height of perineal body, the damaged and removed anadesma and muscles were pull back in sequence from inside to outside the vagina. The lacerated skin of perineal body was interruptedly stitched with 5-0 absorbable sutures (Fig. 1). No injury occurred in anal canal or rectum through anal digital examination.

2.5. Postoperative management

After surgery, vagina was padded with iodophor gauze for 12 hours. Later, the patients adopted hip bath 1 to 2 times per day

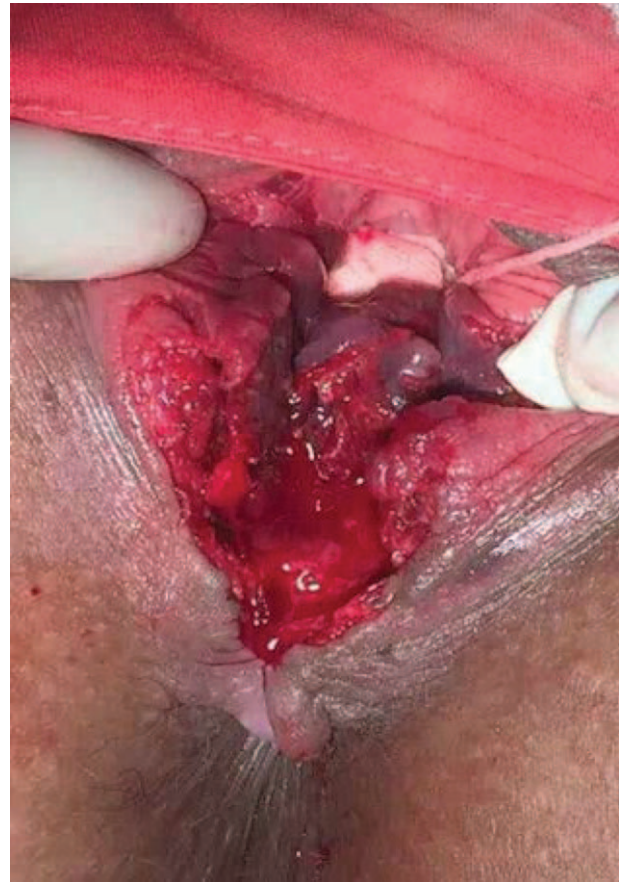


Figure 1. Second degree laceration of perineal body after vaginal delivery.

with potassium permanganate solution up to 7 to 10 days, and the incision only needed to be infiltrated. Outside absorption sutures could fall off naturally. In postoperative 2 months, the patients received pelvic muscle force test again and then resumed sexual relations. Sexual life was assessed in 3 months after surgery.

3. Results

3.1. Indication of the surgery

The volume of blood loss during operation reached 50 to 100 mL. All incisions of 5 patients were primary healing, who had no postoperative fever, hematoma, infection or organ injury. At the same time, there were no other urinary tract problems. Slight and tolerable pain occurred and lasted 3 to 7 days. The 5 cases were followed-up in 2 months after surgery. It was observed that vulva form were improved and the sutures fell off completely. In addition, perineal body was plump, and no mucosa accumulated and prolapsed in vaginal orifice. Vagina could hold 2 fingers and the height of perineal body reached 3.2 to 3.6 cm. Moreover, sexual life was improved to different degrees. These women have no other associated complaints or co-morbidity.

3.2. Pelvic muscle force test

The pelvic muscle force test was performed for all the patients before and after treatments. Before operation, the type I and type

Table 1**Results of pelvic muscle force test.**

Items	Preoperative average (score)	Postoperative average (score)
Type I myofiber	56.25	60.75
Type II myofiber	70.00	74.25

II myofibers average scores were 56.25 and 70, respectively. While in postoperative 2 months, the type I and type II myofibers average scores were 60.75 and 74.25, respectively. Both type I and type II myofibers score were increased (Table 1).

3.3. A typical case

A 36-year-old female patient with pregnancies gave birth to a 3950 g child by episiotomy in 2008, who was unsatisfied with sexual life after the first delivery. The gynaecological examination suggested that obilateral labia minora presented normal form, vaginal orifice appeared moderate relaxation, perineal body area was subject to collapse, perineal body was 2.5 cm length, and the vaginal mucosa folds were small and shallow. Type II and type I myofibers scored 40 and 32, respectively through pelvic floor muscle test. Clinical diagnosis indicated vaginal relaxation (moderate). She delivered another 4060 g baby vaginally without receiving episiotomy, but suffered from second degree laceration of perineal body (Fig. 1). Under local anesthesia, the patient underwent perineal body repair combined with suture of vaginal mucosa folds and vaginal tightening surgery, losing 80 mL blood during operation. The surgery was successful, manifesting as primary healing of incisions, more plump perineal body, and 3.2 cm length of perineal body after surgery (Fig. 2). The patient was followed-up in postoperative 2 months. Through pelvic floor muscle test, type II and type I myofibers scored 68 and 58, respectively. Besides, sexual satisfaction was improved after operation.

4. Discussion

Vaginal delivery may result in pelvic organ fascia and ligament relaxation,^[3] muscle damage as well as vaginal relaxation. These anatomical changes contribute to postpartum urinary incontinence, fecal incontinence, and pelvic floor dysfunction (PFD) such as sexual dysfunction, and the incidence rate reaches 30% to 50%.^[4,5] With full liberalisation of 2-child policy in China, the number of multiparae has been gradually increased, and multiple pregnancy has significantly increased the occurrence rates and severe degrees of vaginal relaxation and PFD. Currently, vaginal tightening surgery is an effective method to rectify vaginal relaxation, repair the damaged muscle and fascia, and increase pelvic muscle force. As for vaginal delivery combined with vaginal tightening surgery and vaginal laceration suture, relevant research has not been reported yet. There 5 multiparae in our hospital undergoing delivery accompanied with vaginal tightening surgery. The operation was implemented after evaluating its feasibility and safety, and the surgical method was discussed in this paper as follows.

4.1. Operation opportunity

After vaginal delivery, vaginal mucosa was thickened under the influence of estrogen, but it became swollen and tender due to the squeeze of fetal head. Sponge forceps with a large stress surface



Figure 2. Nature state after surgery.

were used to grip vaginal mucosa gently to avoid tearing tissues. In separation process, the degree of difficulty was decreased because of loose issues, so blunt dissection was adopted preferentially. Vaginal relaxation contributed to wide vision, thereby bringing convenience to operation. Therefore, the operation difficulty had not been significantly increased compared with unpregnant. It was satisfactory for nonpregnant patients that the newly formed vaginal orifice could hold 2 fingers after vaginal tightening surgery. Vaginal wall became relaxed and muscular tension was reduced after delivery. Muscular tension recovered gradually during puerperium, and vaginal canal could narrow by degrees. Hence, the vagina of postpartum patients undergoing vaginal tightening surgery was more relaxed than that of nonpregnant patients. The vaginae of the 5 cases in this paper could constrainedly hold 3 fingers, showing mild relaxation. Then, the vaginae narrowed to hold 2 fingers in 2 months after delivery, indicating that the surgery achieved a satisfactory effect.

4.2. Incision healing

Estrogen conduces to incision healing,^[6,7] thus postpartum high estrogen status provided guarantees for the healing of incision. Furthermore, fresh lacerated issues were prone to recovery after instant repair compared with older laceration. The patients during puerperium needed to avoid sex, thus assuring the sufficient healing of the incision. In this study, all incisions of 5 patients were primary healing.

4.3. The application of vaginal tightening surgery

There are various surgical methods for vaginal tightening clinically, including posterior vaginal wall mucosa resection^[8] and the vagina tightening surgical without injuring mucosa.^[9] Vaginal mucosal resection is simple, but it may induce long mucosal wound and the formation of scar, which not only results in narrow vaginal orifice, but also conduces to the reduction of vaginal folds and decrease of stimulus intensity, thereby affecting the quality of sexual life. As a result, this resection is not suitable for postpartum patients. In this paper, we adopted the surgical methods of vaginal mucosal preservation and vaginal mucosal fold suture that Zhao et al ever used,^[9] which had the advantages of forming new vagina folds, corresponding with physiological demands, and not easily scarring. Additionally, there were abundant sensory nerve endings in these vaginal mucosae, so the quality of sexual life would be unaffected. What's more, vaginal mucosa and submucous muscle layer were stitched fixedly in the operation, which helped to eliminate submucosal dead space and reduce the occurrences of postoperative hemorrhage, hematoma, and complications. To date, it has attracted more and more attention to implement vaginal tightening surgical combined with perineal body repair.^[10] Perineal body has a 3-dimensional structure made of diverse tissues such as pelvic floor myofiber, fascia, and muscle tendon, and it is not a simple tissue accumulation. Perineal body, characterized by the confluence of superficial and deep transverse muscles of perineum with ball sponge tendons, as well as the interlacement of pubovaginalis and external anal sphincter at different levels, can link pelvic floor muscles together just like tendons.^[11] Consequently, perineal body has a great influence on the shape and function of pelvic floor. In present study, far from inflicting more pains on the patients, the implementation of vagina tightening surgery and perineal body repair for perineal laceration made the shape and function of local vagina more normal.

4.4. The improvement of pelvic floor function

Vaginal delivery can damage the integrity of perineal body tendon and pelvic floor muscles, thereby causing PFD.^[12,13] Zhang and Luo^[14] applied transperineal 3-dimensional ultrasound to investigate the recovery of pelvic floor in early postpartum females with different delivery way, and found that the longitudinal diameter value of diaphragmatic fissure was greater in postpartum 6 to 8 weeks of vaginal delivery group than that in childless group. Cyr et al^[15] suggested that the shape and function of pelvic floor muscles might be impaired in the early postpartum women with lacerated puborectalis through 3D/4D ultrasound. In our study, pelvic floor muscle and fascia in 1/3 vagina were sutured and restored their integrity. Based on the scores of pelvic muscle force test, both the type I and type II myofibers were improved after operation. Besides, we have to point out that studies with a larger sample size are warranted to further validate our conclusion. The long-term effect of this surgical method on pelvic floor function needs further observation.

All in all, our analysis indicates that it is feasible to implement vaginal delivery combined with vaginal tightening surgery and

perineal body repair. This surgical method is safe and effective for improving sexual life and pelvic floor function, which help to save medical resources and reduce healthcare costs with considerable social benefits.

Author contributions

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Validation: Jing Chen.

Visualization: Jing Chen.

Writing – original draft: Jing Chen.

Writing – review and editing: Jing Chen.

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