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Symphysiotomy – for and against

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SUMMARY

In Poland, symphysiotomy is believed to be a procedure that should never take place in contemporary obstetrics. However, it is still an alternative to cesarean section in many countries. This paper presents a historical overview of this procedure. It also provides a description of symphysiotomy as it is currently conducted in Papua New Guinea. The literature review revealed that this procedure is believed to be an inexpensive, non-invasive and life-saving procedure (both to the mother and the child) if cesarean section is not available or in special situations.

Key words: symphysiotomy; failure to progress; obstructed labor; shoulder dystocia

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INTRODUCTION

At present, symphysiotomy is not conducted in countries with advanced obstetrics. The last symphysiotomies in Europe were performed in Ireland in the 1980s. Before the indications to cesarean section were broadened, which took place at the beginning of the 20th century, symphysiotomy was performed in most European countries, Poland included.

Munro Kerr, during a lecture at the Royal College of Gynaecologists in 1948, stated: "Dramatic is the operation of caesarean section. But, if you have witnessed an operator making vain attempts to deliver the fetal head... and then seen him divide the symphysis and extract it with ease by means of forceps, you will be forced to admit that the operation of symphysiotomy is just as impressive. And it is so finished, so eminently suitable in the particular circumstances" [1]. Failure to progress or obstructed labor causes about 50,000 maternal deaths each year in the Third World. It also increases perinatal morbidity and mortality, as well as maternal morbidity [2,3]. At present, symphysiotomy is performed in countries with limited accessibility of cesarean section. According to the WHO, it is conducted in numerous countries, such as: Congo, Nigeria, South Africa, Uganda, Tanzania, Papua New Guinea, Pakistan and other developing countries. A growing cesarean section rate prompts us to review this operation. Moreover, recent reports suggest the need to conduct randomized studies to compare symphysiotomy with caesarean section, which would allow objective determination of its value [4]. Most doctors from developed countries have rather negative associations with symphysiotomy. The knowledge on this matter is limited [5].

HISTORICAL OVERVIEW

The first documented symphysiotomy was conducted on October 1 1777 in Paris by Jean René Sigault. The patient was a 30-year-old and only 120 cm tall woman in her fifth pregnan-

cy. In all her four previous pregnancies, Sigault performed difficult version and manual extraction, and the children were stillborn. Both the mother and the infant survived symphysiotomy, which was considered a success. Sigault was honored for that, and the method spread throughout France, unfortunately with rather poor outcomes. Maternal and perinatal mortality was high, which can be explained by the lack of aseptics and antiseptics principles [6]. Jean Louis Boudelocque, a great authority of French obstetrics, fiercely criticized the supporters of symphysiotomy. He argued that this procedure was anatomically unjustified and too bold. This attitude of Jean Louis Boudelocque made the method lose its significance for many years. E.C.C.J. Von Siebold, another European authority of obstetrics, also criticized symphysiotomy. The method was reborn in Italy, where Domenico Ferrara performed the first procedure. Ottavio Morisani was the next doctor to introduce this practice, and with good outcomes, better than previously. Many Italian doctors followed Morisani, which resulted in the appearance of so-called "Naples school," the experience of which was also used by Polish doctors, e.g. Ludwik Neugebauer. Towards the end of the 19th century, symphysiotomy returned to France, where it was used first by Adolf Pinard who worked in the Clinique Boudelocque [6]. This was a renaissance for symphysiotomy in Europe and America. Numerous congresses were devoted to this method; doctors discussed indications and contraindications as well as various techniques and study results. Closed symphysiotomy, described in 1920 by an Argentinian physician, Enrique Zarate, gained popularity. Polish doctors who conducted symphysiotomy included Franciszek Neugebauer, Heliodor Święcicki and others. Studies revealed that each centimeter of pubic separation after symphysiotomy increases the straight diameter of the pelvis by 2 mm, and that the anterior sacroiliac ligaments show damage when 6 cm of separation is exceeded, which was sufficient to conclude most labors.

SYMPHYSIOTOMY IN PAPUA NEW GUINEA

In Papua New Guinea, symphysiotomy is used in accordance with the guidelines provided in the Glen Mola's et al. textbook [7]. The procedure consists in division of the cartilage of the pubic symphysis in order to enlarge the pelvic canal and overcome moderate cephalopelvic disproportion (the first experience with symphysiotomy should not involve an obese patient). Symphysiotomy is preferable to cesarean section in some situations because:

- it can be done quickly in the delivery ward after administration of 10 mL of local anesthesia (1% Lidocaine); therefore there is no delay associated with the theater and team preparation (which can take many hours at night if the theatre staff must be called);
- when the head is very low down in the pelvis, one should not push it back up to the pelvis to effect delivery (during cesarean section);
- after the operation, the woman does not have a uterine scar which could cause complications in subsequent pregnancies;
- in the next pregnancy, the pelvis is likely to be a little larger because of natural growth of a young woman, or slightly wider due to the fact that the symphysis heals by fibrous union;
- maternal mortality rates from cesarean section may reach 2–5% for obstructed labor in hospitals without experienced anesthetists, surgeons and blood transfusion facilities;
- cesarean section is particularly dangerous in prolonged labor and intrauterine infection. Symphysiotomy should not cause maternal mortality;
- the probability of safe delivery is greater with vacuum extraction, and if the procedure fails, are you certain and sure about symphysiotomy?

INDICATIONS FOR SYMPHYSIOTOMY

Symphysiotomy can be performed for a number of indications, including failed trial of vacuum extraction, entrapped after-coming head of the breech and shoulder dystocia. The symphyseal ligaments heal up fast after symphysiotomy in young women (particularly adolescents). It is best not to perform symphysiotomy in women older than 30 years of age, because healing of the ligaments is much slower, which will make the post-operative course more difficult. Also, older women may sometimes develop long-term urinary continence problems.

Procedure description

1. Always be sure whether you intend to perform complex vacuum extraction (trial of vacuum extraction) or simple vacuum extrac-

tion. Whenever a trial of vacuum extraction is to be performed, have symphysiotomy instruments at hand so that symphysiotomy can proceed immediately if the trial of vacuum extraction fails (otherwise, you need to be able to conduct immediate cesarean section).
2. Proceed with the trial of vacuum extraction in the usual way. With experience, it will become possible for you to tell by the second pull whether the trial of vacuum extraction will succeed or not.
3. When it is clear that the trial of vacuum extraction will not succeed (i.e. no progress by the 2nd or 3rd traction), ask two assistants to take the patients' legs out of the stirrups. They must hold each foot on the end of the bed with one hand and support the knee with the other hand so that the angle between the thighs does not exceed 90 degrees (this prevents sacroiliac ligament injury).
4. Place a firm plastic catheter in the bladder to be easy to palpate when your finger is in the vagina.
5. Inject 10 mL of local anesthetic (insert the needle just above the clitoris) into the skin and down to the symphysis in the midline.
6. Swab the area clear of pubic hair just above the clitoris with iodine solution.
7. Place the left index finger in the vagina, pushing the catheter to the patient's right (away from the midline) and hooking the end of your finger right over the top of the back of the symphysis so as to protect the bladder neck.
8. Make a stab incision with a large scalpel (size 20, 22 or 24) entering the skin approximately 2 cm above the clitoris, then straight down to the symphysis and through it. As you cut through the symphysis cartilage you will feel the pressure of the blade on your finger in the vagina (the arcuate ligament and vaginal mucosa should not be cut). Next, with a seesaw motion, cut the symphysis downwards to the bottom. Rotate the blade 180 degrees and cut the rest of it upwards. When you have completed the division, you will feel (and hear) the symphysis separating. You can check whether you have divided all the symphysis cartilage by palpating with your little finger through the incision. A common mistake is to leave a bridge of the symphysis at the anterior top of the joint. To make sure that the symphysis has been completely divided, tap the scalpel onto your vaginal finger along the whole length of the symphysis, particularly checking whether the top bridge of cartilage was not left intact.
9. When you have divided the symphysis and felt it divide, anesthetize the perineum, make an episiotomy and reapply the vacuum cup posterior to the fetal head. The head should now be delivered by downward traction with just one moderate pull with the next uterine contraction. Inject oxytocin and add 20 U of oxytocin to the drip to prevent postpartum hemorrhage. Remind the two assistants who are supporting the legs not to allow them to open more than 90 degrees (angle between the thighs).
10. After placenta delivery, tell the two leg holding assistants to bring the knees together. Suture the episiotomy and the skin over the symphysiotomy site. Replace the polythene catheter with a Foley catheter. The assistants can now straighten the legs, being careful to keep them together all the time.
11. Loosely place elastic bandage around the knees to stop the legs from falling apart inadvertently as the woman sleeps. Administer broad spectrum antibiotics for 5 days and Pethidine in drip infusion for pain relief.
12. Turn the mother onto her side; this allows the symphysis to be pushed together, minimizes bleeding from the incision and lowers the risk of hematoma formation.
13. Leave the Foley catheter in situ for 24–48 hours (but retain it for 10 days if the urine is blood-stained after 12 hours). Remove the elastic bandage the next morning and allow the patient to move her legs around in the bed.
14. The patient may get out of bed on the second day after the procedure, but she will need a walking frame for about five days. Remove the symphysis stitch after 7 days. Follow the woman up in the clinic weekly until she has made a full recovery; ask about mobility and stress incontinence at each visit. Encourage pelvic floor exercises at each visit.

The most common problems after symphysiotomy

- Urinary problems. Many (mainly older) women have stress incontinence for some time after the delivery. However, the great

majority improve with pelvic floor exercises over a couple of months.
- Pelvic instability. Some women feel fine after about 2 weeks, but some have walking difficulties for about a month, i.e. until the ligaments binding the symphysis together completely heal up. Reassure the patient who is having walking difficulty that her pelvic stability will return after a month or so. Symphysiotomy should not be repeated in a subsequent pregnancy as the second operation is likely to fail to increase the pelvic diameters. If labor becomes obstructed in the next pregnancy, do a cesarean section.

DISCUSSION

Symphysiotomy can be performed in two ways:
1) open – by skin incision large enough to see and palpate what is being done, and
2) closed – by skin incision large enough to introduce a scalpel blade.

Most operators who perform this procedure prefer the latter manner. Some, however, do prefer the open method. Irrespective of the technique, the symphyseal cartilage must be cut completely in the midline. An incision that reaches the bone increases the risk of osteitis and long-term pain. This complication is, however, rare. Local soft tissue and cartilage infection heals up without problems.

The procedure of symphysiotomy presented above describes the closed method, also called subcutaneous symphysiotomy. In the obstetric ward of the Port Moresby General Hospital, this procedure is usually performed once or twice a month, typically after a failed vacuum extraction. Annually, 12,000 births are received there. The cesarean section rate is approximately 5%, and vacuum births account for approximately 2.5%. According to data from 2010, maternal mortality equals 733/100,000 live birth, while perinatal mortality is 27.9/1,000 [7,8].

Symphysiotomy is an alternative to cesarean section in many countries. Perinatal mortality after symphysiotomy is half as high as after cesarean section [1]. Most authors underline the fact that it is a rather inexpensive and easy procedure. Depending on the operator's experience, it takes 1–10 minutes. Reid describes symphysiotomy performed after 4-minute maneuvers associated with shoulder dystocia. Symphysiotomy and delivery took one minute. The fetus weighing 4,560 g was born alive without any defects. The mother was discharged 12 days after delivery [9]. Hartfield states that in the case of shoulder dystocia, symphysiotomy can be conducted in 5 minutes. One only needs a catheter and a scalpel. Pelvic separation of 2.5 cm should provide enough space for delivery of obstructed shoulders in almost every case. The author also states that subcutaneous symphysiotomy should be one of the treatment options for shoulder dystocia and that it might be the best choice [5].

Bjorklund conducted a retrospective literature review and analyzed the use of symphysiotomy and cesarean section in the first and second halves of the 20th century. He found that in the first half of the 20th century 40 mothers and 217 children died after a total of 2,507 symphysiotomy procedures (1.6% and 9.3%, respectively). In the second half of the century, only 3 mothers and 187 children died after a total of 1,954 procedures (0.15% and 11.4%, respectively). The same author compared maternal and perinatal mortality after symphysiotomy and cesarean section. In the first half of the 20th century, 10 of 490 (2%) mothers died after symphysiotomy, 50 of 636 (7.9%) mothers died after cesarean section and 22 of 375 (4.1%) neonates died after cesarean section. In the second half of the century, there was 1 maternal death and 37 perinatal deaths per 307 symphysiotomies (0.3% and 12.1%, respectively). After 571 cesarean sections, 10 mothers (1.8%) and 66 (11.6%) neonates died. These data indicate that maternal mortality was four times higher after cesarean section compared to symphysiotomy. Perinatal mortality was the same in both groups [1]. Symphysiotomy is a significant alternative of cesarean section in women with a high surgical and anesthetic risk, including cases with intrauterine infection (sepsis). It has been successfully used for the trapped after-coming head of the breech. The infamy of symphysiotomy is largely associated with its overuse in the past. In the period between 1940 and 1980 in Ireland, approximately 1,500 symphysiotomies were conducted, often without patient consent or with no medical indications, but for religious beliefs. The case is still not closed, and 350 women are awaiting court decisions and compensation [10].

CONCLUSION

Symphysiotomy is safe for the mother. It is a potentially life-saving surgery for the child. It entails permanent enlargement of the pelvis,

leaves no scars and facilitates future natural deliveries for women with the contracted pelvis. It is superior to cesarean section as it is associated with a lower risk for the mother and the same risk for the child. Symphysiotomy entails pain and discomfort for the woman, but severe complications are rare, particularly if the surgery is conducted by an experienced physician.

The increase in the cesarean section rate is probably impossible to stop. However, if most doctors had experience in symphysiotomy comparable to that in cesarean section, this would be beneficial for patients. Discussion on this matter is needed and should be encouraged during obstetric trainings as the knowledge of symphysiotomy may help save lives of the mother or child [4].

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