Symphysiotomy for feto-pelvic disproportion (Review)

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This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2010, Issue 10

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[Intervention Review]

Symphysiotomy for feto-pelvic disproportion

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Editorial group: Cochrane Pregnancy and Childbirth Group.
Publication status and date: New, published in Issue 10, 2010.
Review content assessed as up-to-date: 30 August 2010.

Citation: Hofmeyr GJ, Shweni PM. Symphysiotomy for feto-pelvic disproportion. *Cochrane Database of Systematic Reviews* 2010, Issue 10. Art. No.: CD005299. DOI: 10.1002/14651858.CD005299.pub2.

ABSTRACT

Background

Symphysiotomy is an operation in which the fibres of the pubic symphysis are partially divided to allow separation of the joint and thus enlargement of the pelvic dimensions during childbirth. It is performed with local analgesia and does not require an operating theatre nor advanced surgical skills. It may be a lifesaving procedure for the mother or the baby, or both, in several clinical situations. These include: failure to progress in labour when caesarean section is unavailable, unsafe or declined by the mother; and obstructed birth of the aftercoming head of a breech presenting baby. Criticism of the operation because of complications, particularly pelvic instability, and as being a 'second best' option has resulted in its decline or disappearance from use in many countries. Several large observational studies have reported high rates of success, low rates of complications and very low mortality rates.

Objectives

To determine, from the best available evidence, the effectiveness and safety of symphysiotomy versus alternative options for obstructed labour in various clinical situations.

Search strategy

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 August 2010), the Cochrane Central Register of Controlled Trials (*The Cochrane Library* 2010, Issue 3) and PubMed (1966 to 31 August 2010).

Selection criteria

Randomized trials comparing symphysiotomy with alternative management, or alternative techniques of symphysiotomy, for obstructed labour or obstructed aftercoming head during breech birth.

Data collection and analysis

Planned methods included evaluation of studies against objective quality criteria for inclusion, extraction of data, and analysis of data using risk ratios or mean differences with 95% confidence intervals. The primary outcomes were maternal death or severe morbidity, and perinatal death or severe morbidity.

Main results

We found no randomized trials of symphysiotomy.

Authors' conclusions

Because of controversy surrounding the use of symphysiotomy, and the possibility that it may be a life-saving procedure in certain circumstances, professional and global bodies should provide guidelines for the use (or non-use) of symphysiotomy based on the best available evidence (currently evidence from observational studies). Research is needed to provide robust evidence of the effectiveness and safety of symphysiotomy compared with no symphysiotomy or comparisons of alternative symphysiotomy techniques in clinical situations in which caesarean section is not available; and compared with caesarean section in clinical situations in which the relative risks and benefits are uncertain (for example in women at very high risk of complications from caesarean section).

PLAIN LANGUAGE SUMMARY

Symphysiotomy for feto-pelvic disproportion

Symphysiotomy is an operation to enlarge the capacity of the mother's pelvis by partially cutting the fibres joining the pubic bones at the front of the pelvis. Usually, when the baby is too big to pass through the pelvis, a caesarean section is performed. If caesarean section is not available, or the mother is too ill for, or refuses, caesarean section or if there is insufficient time to perform caesarean section (for example when the baby's body has been born feet first, and the head is stuck), symphysiotomy may be performed. Local anaesthetic solution is injected to numb the area, then a small cut is made in the skin with a scalpel, and most of the fibres of the symphysis are cut. As the baby is born, the symphysis separates just enough to allow the baby through. Large observational studies have shown that symphysiotomy is extremely safe with respect to life-threatening complications, but rarely may result in pelvic instability. For this reason, and because the operation is viewed as a 'second-class' operation, it is seldom performed today. Health professionals fear censure should they perform a symphysiotomy which leads to complications. Proponents argue that many deaths of mothers and babies from obstructed labour in parts of the world without caesarean section facilities could be prevented if symphysiotomy was used. This review found no randomized trials evaluating symphysiotomy.

BACKGROUND

Introduction

Symphysiotomy is an operation in which fibres of the pubic symphysis pubis are divided with a scalpel using local analgesic infiltration. This allows the pubic bones to separate, creating more space in the pelvis for the birth of the baby.

Symphysiotomy has come to be regarded as an unacceptable operation because of perceptions that it is a gruesome procedure which may result in an unstable pelvic girdle and urinary incontinence, and the view that it is a 'second-class' operation used only in women from poor communities (Verkuyl 2007). In the last 20 years it has virtually disappeared from practice in many low-income countries. An article referring to symphysiotomy and pubiotomy (division of the pubic bone) in Irish women in the 1950s as 'barbaric' (Payne 2001) provoked considerable debate. Emotions, and sensitivity to political correctness make it difficult to reach an objective evaluation of the benefits and risks of symphysiotomy.

When caesarean section is not available or not safe or unacceptable to the mother, symphysiotomy may be life-saving for both mother and baby (Wykes 2003). Complications of the procedure have been reduced by improved operative techniques (Maharaj 2002) (such as partial rather than complete symphysiotomy) and postoperative care (early mobilisation).

Possible indications for symphysiotomy

The main indications for symphysiotomy are cephalo-pelvic disproportion with cephalic presentation, including cases of failed assisted birth, and arrested aftercoming head of the breech (Sunday-Adeoye 2004). It has been recommended for shoulder dystocia unresponsive to conventional procedures (Baxley 2004; Kwek 2006), but one report of three cases of symphysiotomy as a

last resort for shoulder dystocia recorded poor results (Goodwin 1997), and this indication is controversial. Symphysiotomy may be lifesaving for women too ill to survive caesarean section following neglected labour (Maharaj 2002; Verkuyl 2001). Women from some cultural backgrounds are immovably opposed to caesarean section, but will accept symphysiotomy because it does not contradict their cultural imperative to give birth vaginally.

Apart from the use of symphysiotomy to overcome existing obstruction, the availability of symphysiotomy may influence obstetric choices. For example, caesarean section may be chosen for breech birth because of the possibility of difficult vaginal birth in a small proportion of cases. If the mother and caregivers feel reassured that the problem of obstruction to the aftercoming head can if necessary be overcome with symphysiotomy, then routine caesarean section can be avoided in a large number of cases, whereas symphysiotomy will be required in only a very small number in which the problem actually occurs, if at all. Availability of symphysiotomy as an option in a health service may encourage attendance by women who avoid the service because of a wish to avoid caesarean section.

Advantages and disadvantages

Symphysiotomy has several advantages over caesarean section:

1. it is more rapid to perform;
2. it is simpler;
3. it can be performed by health workers without formal training in laparotomy skills;
4. only local analgesia is used;
5. no operating theatre, anaesthetist, electricity or sophisticated equipment are needed;
6. there is no risk of scarred uterus in subsequent pregnancies, particularly when women may not in future have ready access to caesarean section;
7. it may be life-saving for the breech baby with entrapped aftercoming head, and possibly in shoulder dystocia;
8. it may be preferred in cultures in which caesarean section is viewed as a personal failure on the part of the woman (Maharaj 2002);
9. it results in a permanent enlargement of the pelvis (Ersdal 2008);
10. use of symphysiotomy reduces the caesarean section rate (Nkwo 2009).

Disadvantages include:

1. for birth of the baby the cervix must be fully dilated or progress to full dilatation;
2. it is contraindicated in the presence of gross disproportion, e.g. in hydrocephaly;
3. it may rarely be associated with morbidity such as pelvic pain and instability (Chalidis 2007);
4. other complications include vaginal lacerations; haematuria (blood in the urine); wound infection; urinary incontinence; and vesico-vaginal fistula (a track between the bladder and the vagina). Necrosis of the urethra and bladder neck have been described following symphysiotomy, though the fact that in all cases the baby had died prior to the procedure suggested that pressure necrosis from prolonged obstructed labour may have been the cause (Onsrud 2008).

Symphysiotomy in practice - results of observational studies

The core issue regarding the use of symphysiotomy is the possibility of long-term morbidity.

In a report of 32 women having a symphysiotomy from Mozambique and Botswana, with follow up on 31 (Bergstrom 1994), immediate complications were vaginal lacerations (three), haematuria (one), wound infection (one) and pain causing gait problems (two). There were no cases of persistent pain or other complications at follow up.

A review and report of 54 additional women from Tanzania concluded that symphysiotomy is associated with lower mortality than caesarean section and similar rates of complications (though different complications) (Van Roosmalen 1987).

A small follow-up study in Zimbabwe found no difference in long-term morbidity between women who had symphysiotomy compared with Caesarean section for similar indications (Ersdal 2008).

A retrospective comparison of 65 women having a symphysiotomy and 108 having a caesarean section performed in 1988 to 1994 after a failed trial of assisted birth at the Port Moresby General Hospital (Papua New Guinea) revealed no significant differences in perinatal or maternal outcomes (Mola 1995). Mothers who had symphysiotomy required a longer hospital stay, but had fewer complications necessitating additional surgery. The authors cited as the main complications of symphysiotomy: leg and pelvic pain, pelvic instability, and stress incontinence.

A recent review of 5000 cases of symphysiotomy in the last century concluded: "... symphysiotomy is safe for the mother from a vital perspective, confers a permanent enlargement of the pelvis and facilitates vaginal birth in future pregnancies, and is a life saving operation for the child. Severe complications are rare. ... [T]here is considerable evidence to support a reinstatement of symphysiotomy in the obstetric arsenal, for the benefit of women in obstructed labour and their offspring" (Bjorklund 2002). The commentary on the latter paper calls for symphysiotomy to be made widely available in order to reduce the appalling rate of death and morbidity from obstructed labour which persists in poor countries (Liljestrand 2002).

Subsequent reports of case series of symphysiotomy have also concluded that the procedure has few complications. A report from Nigeria documented 1013 symphysiotomies performed between 1982 and 1999 (3.7% of 27,477 births) (Sunday-Adeoye 2004). Indications included cephalopelvic disproportion (88%), arrest of the aftercoming head of the breech and previous caesarean section

with mild cephalopelvic disproportion. Postoperative complications (36) included failed symphysiotomy (10), transient pelvic and leg pain (12), transient stress incontinence (6), para-urethral lacerations (vaginal tears alongside the urethra) (3), vaginal lacerations (2), gait abnormality (2) and vesico-vagina fistula (successfully repaired) (1). There were 104 perinatal deaths and one maternal death from pulmonary embolism three days after birth.
A report from Mile Four Mission Hospital, Abakaliki, Nigeria, made the point that caesarean section was viewed culturally as a reproductive failure. During 2000 and 2001, 75 of 4596 women (1.6%) gave birth with partial symphysiotomy. There were 11 complications, including paraurethral lacerations (four), and transient stress incontinence (four) wound infection (two) and haemorrhage (one). All the women could walk and run at follow up (Ezegwui 2004).
There have been case reports from well-resourced countries, when symphysiotomy has been used, for example, for birth of the aftercoming head of a breech presenting baby (Wykes 2003). The place of symphysiotomy in well-resourced countries has recently been addressed (Menticoglou 2009).
Recent guidelines issued by the Society of Obstetricians and Gynecologists of Canada recommend the use of symphysiotomy for obstructed aftercoming head of the breech (Kotaska 2009).
The importance of proper training has been emphasised (Verkuyl 2008).
A survey in Zimbabwe found that doctors and midwives working in peripheral district hospitals had more positive attitudes towards symphysiotomy than those working in central hospitals (Ersdal 2008).
The contention that symphysiotomy is an unacceptable operation has seldom been based on the views of clients. A Nigerian survey of pregnant women's views in a region where symphysiotomy has been practised for many years and is well know among women found that 63% of women given the choice would prefer symphysiotomy to caesarean section (Onah 2004).

Setting-specific questions regarding symphysiotomy

There are two questions regarding the appropriateness of use of symphysiotomy.
First: are there clinical situations in which symphysiotomy is preferable to caesarean section or other conventional methods? This is a straightforward clinical issue.
The second is more complex: when caesarean section is not available, should symphysiotomy be used as a 'second best' option?
To place the second question in context, we need to consider the question of maternal mortality related to obstructed labour. The Millenium Development Goals call for a reduction in maternal mortality ratio by 75% between 1990 and 2015. In many low-income countries, maternal mortality ratios are in the region of 1000 per 100,000 births. One of the major causes is obstructed labour. For example, in a retrospective analysis of births at Jimma hospital, south western Ethiopia from September 1990 to May 1999, 7% (945/13,425) were complicated by obstructed labour. Maternal case mortality rate from obstructed labour was 9.1% and perinatal mortality rate 62.1%. Obstructed labour was the commonest cause of maternal and perinatal mortality at the hospital during the study period, being responsible for 45.5% and 37.4% of the deaths respectively (Gaym 2002).
A hospital-based review of 86 maternal deaths (580/100,000 births) between 1981 and 1986 in Pondicherry, India, found the following causes which may be related to obstructed labour: prolonged labour 8.1%; ruptured uterus 9.3%; sepsis other than post-abortion sepsis 11.8%; haemorrhage 8.1%. Most of the women who died were illiterate (97.6%), poor (98.8%), and had received no prenatal care (94.2%), and 47.7% travelled more than 60 km to the hospital. Untrained attendants had excessively interfered with about 33% before they reached the hospital (Rajaram 1995).
Vesico-vaginal and recto-vaginal fistulas (open channels from the bladder or rectum to the vagina) remain an enormous problem in many poor countries, most being the result of prolonged obstructed labour (Steiner 1996).
Caesarean section for treatment of obstructed labour is often unavailable or unacceptable in poor countries. When it is available, lack of facilities and skills often result in an operative mortality in the region of 1%. For example, in a Nigerian study, the caesarean section rate in Ile-Ife increased from 2.3% in 1977 to 10.6% in 1985 due to a higher proportion of cephalopelvic disproportion (39.9%). Morbidity occurred in 33% and mortality in 0.71% of caesarean sections (Okonofua 1988). In a study in seven rural district hospitals in Zimbabwe, the post-caesarean section maternal mortality was 1.6%, mainly from haemorrhage (Van Eygen 2008).
Maternal and perinatal morbidity from caesarean section may be particularly high when performed in the second stage of labour with the baby's head deeply impacted in the mother's pelvis and reduced amniotic fluid volume. In this situation the relative benefits of symphysiotomy may be more pronounced.
A crucial question to be answered if maternal mortality from obstructed labour in poor countries is to be taken seriously, is whether symphysiotomy is an effective and acceptable strategy to use. If so, considerable influence from governments and health organizations will be needed to implement the practice and to overcome current negative sentiments towards it.

Symphysiotomy technique

See Appendix 1.

Need for a review

There is a need to evaluate the available evidence, and if necessary recommend further research, regarding the following questions.

What are the relative risks and benefits of symphysiotomy for:

1. obstructed aftercoming head during breech birth;
2. shoulder dystocia;
3. obstructed labour when no caesarean section facilities are available;
4. compared with caesarean section in specific circumstances such as a mother who is not fit for anaesthesia, or who prefers symphysiotomy.

OBJECTIVES

To determine, from the best available evidence, the relative benefits and risks of symphysiotomy in defined clinical situations, compared with alternative management; and the relative benefits and risks of alternative symphysiotomy techniques.

METHODS

Criteria for considering studies for this review

Types of studies

Randomized controlled trials. We planned to include quasi-randomized trials, as well as studies presented only as abstracts, provided adequate details were available.

Types of participants

Women in labour for whom symphysiotomy is a possible option, including the following clinical situations:

1. suspected cephalopelvic disproportion in first stage of labour;
2. suspected cephalopelvic disproportion in second stage of labour;
3. suspected cephalopelvic disproportion, baby demised (versus caesarean section or craniotomy);
4. suspected cephalopelvic disproportion, caesarean section contraindicated, refused or not available;
5. failed vacuum or forceps birth;
6. arrested aftercoming head during breech birth;
7. shoulder dystocia unresponsive to conservative manoeuvres.

Cephalopelvic disproportion is typically suspected when labour fails to progress in spite of adequate uterine contractions, usually with signs of obstruction such as excessive moulding of the baby's head and caput succedaneum.

Types of interventions

Symphysiotomy compared with alternative technique of symphysiotomy or alternative management, including:

1. caesarean section;
2. other obstetric procedures;
3. allowing more time for labour to progress;
4. augmentation of labour;
5. transfer to health centre with more advanced facilities (e.g. for caesarean section);
6. destructive procedures (e.g. craniotomy).

Types of outcome measures

Primary outcomes

1. Maternal death or severe morbidity (8, 10, 11 below)
2. Perinatal death or severe morbidity (4, 5, 7 below)

Secondary outcomes

For the mother

1. Postoperative pain
2. Blood loss
3. Blood transfusion
4. Vesico-vaginal fistula
5. Anaemia
6. Sepsis
7. Repeat surgery
8. Venous thromboembolism
9. Intensive care unit (ICU) admission
10. Duration of hospital admission
11. Long-term severe pain
12. Long-term difficulty walking
13. Urinary incontinence
14. Flatus incontinence
15. Faecal incontinence
16. Breastfeeding failure (as defined by trial authors)
17. Depression
18. Satisfaction with care
19. Preference
20. Subsequent infertility or obstetric problems
21. Perinatal death

For the baby

1. Low five-minute Apgar score (as defined by trial authors)
2. Low cord blood pH or high base deficit (as defined by trial authors)
3. Injury

4. Admission to neonatal ICU
5. Neonatal encephalopathy
6. Duration of hospitalisation
7. Neurological deficit (as defined by trial authors)
8. Death

For the caregivers/facility

1. Caregiver satisfaction
2. Cost

Search methods for identification of studies

Electronic searches

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register by contacting the Trials Search Co-ordinator (August 2010).

The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. weekly searches of MEDLINE;
3. handsearches of 30 journals and the proceedings of major conferences;
4. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL and MEDLINE, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Specialized Register' section within the editorial information about the Cochrane Pregnancy and Childbirth Group.

Trials identified through the searching activities described above are each assigned to a review topic (or topics). The Trials Search Co-ordinator searches the register for each review using the topic list rather than keywords.

In addition, we searched CENTRAL (*The Cochrane Library* 2010, Issue 3) and PubMed (1966 to 31 August 2010) using the search term: 'symphysiotomy'.

We did not apply any language restrictions.

Data collection and analysis

No randomized or quasi-randomized trials were identified. In future updates of this review, if more data become available, the methods to be used for data collection and analysis are outlined in Appendix 2.

RESULTS

Description of studies

We found no randomized or quasi-randomized trials of symphysiotomy for either inclusion or exclusion.

Risk of bias in included studies

No studies included.

Effects of interventions

No studies included.

DISCUSSION

Symphysiotomy is a controversial procedure. It is regarded by many as an outdated and even unacceptable operation. On the other hand it is claimed to be a life-saving procedure in certain clinical situations (such as obstructed aftercoming head during breech birth), and in settings with no access to caesarean section, for wider indications such as obstructed labour. In the absence of information from randomized trials, policy and clinical decisions regarding the use of symphysiotomy need to be based on evidence from observational studies as outlined in the introduction.

AUTHORS' CONCLUSIONS

Implications for practice

In view of the emotive debates surrounding the use of symphysiotomy, and the likelihood that use of symphysiotomy may be lifesaving in several clinical circumstances, while awaiting results of future high quality trials, it is important for professional and global bodies to produce guidelines based on objective evaluation of available evidence. Such guidelines should take into account the current appalling maternal and perinatal mortality rates from obstructed labour in communities where safe caesarean section is not available or is unacceptable.

Implications for research

There is a need for randomized trials to evaluate the effectiveness and safety of symphysiotomy. The following research questions need to be addressed.

1. Symphysiotomy versus no symphysiotomy for failure to progress in the second stage of labour when caesarean section is not available, not safe or is declined by the mother.

2. Symphysiotomy versus caesarean section in clinical situations in which the relative risks and benefits are considered to be balanced (for example, in women at high risk for abdominal surgery, general anaesthesia or regional analgesia).

3. Symphysiotomy versus no symphysiotomy for obstructed birth of the aftercoming head during breech birth.

4. (Low priority) Symphysiotomy versus no symphysiotomy for shoulder dystocia unresponsive to conventional management.

ACKNOWLEDGEMENTS

We acknowledge the support of the Cochrane Pregnancy and Childbirth Group team.

As part of the pre-publication editorial process, this review has been commented on by three peers (an editor and two referees who are external to the editorial team), a member of the Pregnancy and Childbirth Group's international panel of consumers and the Group's Statistical Adviser.

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* *Indicates the major publication for the study*

DATA AND ANALYSES

This review has no analyses.

HISTORY

Protocol first published: Issue 2, 2005

Review first published: Issue 10, 2010

Date	Event	Description
24 September 2008	Amended	Converted to new review format.

CONTRIBUTIONS OF AUTHORS

GJ Hofmeyr conducted the literature search and contributed to the writing of the review. PM Shweni provided clinical input to the writing of the paper.

DECLARATIONS OF INTEREST

None known.

SOURCES OF SUPPORT

Internal sources

- (GJH) Effective Care Research Unit, University of the Witwatersrand, University of Fort Hare, Eastern Cape Department of Health, South Africa.
- (PMS) Eastern Cape Department of Health, South Africa.

External sources

- (GJH) HRP-UNDP/UNFPA/WHO/World Bank Special Programme in Human Reproduction, Geneva, Switzerland.
- (GJH) Rockefeller Foundation Residency, October 2004, USA.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Since the protocol was published the Pregnancy and Childbirth Group has updated its methods; we have incorporated these into the review.

We have added 'vesico-vaginal fistula' as a secondary outcome. This was not prespecified in our protocol.

We have modified the prespecified maternal secondary outcome 'death' to 'perinatal death'.