Randomized controlled trial comparing the angled Episcissors-60® against straight scissors in assisted and outlet forceps delivery

A thesis

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Abstract

Introduction: Episiotomy is the surgical enlargement of the vaginal orifice by an incision of the perineum during the second stage of labor or just before delivery and requires repair by suturing.

Aim of work: To evaluate the extent of vaginal and perineal trauma using the angled Episcissors-60 versus straight scissors during assisted forceps delivery. Also, assessment of neonatal outcome including apgar score and neonatal birth trauma.

Patients and Methods: Randomized controlled trial comparing the angled Episcissors-60 against straight scissors in assisted and outlet forceps delivery. Prospective randomized control clinical comparative trial. Maternity department of Ain Shams Hospital. This randomized clinical trial included 100 women were admitted for vaginal delivery at the labor ward of Ain Shams Hospital. Selection of cases was according to inclusion and exclusion criteria.

Results: Group A: Included 50 women who had low or outlet foreceps delivery with the use of the angled Episcissors-60. **Group B:** Included 50 women who had low or outlet forceps delivery with mediolateral episiotomy with the use of straight scissors.

Conclusion: The angled-version Episcissors-60 demonstrated a post-delivery suture angle and post -delivery distance from midline significantly higher than among control group with straight episissors. Length of episiotomy was significantly higher among study group than among control group. Obstetric anal sphincter injuries were significantly less frequent among study group than among control group.

Keywords: Comparing the angled Episcissors-60®, against straight scissors, Outlet forceps delivery

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Last but not least, I would like to pay high regards to my patients asking **Allah** that this study can help them.

Osama Abdullah Abdelkhalik Fayed

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Abbreviation	Full name
ACOG	American college of obstetrics and gyneacology
AP	Anteroposterior
LOA	Left occiput anterior
OASIs	Obstetric anal sphincter injuries
OP	Occipito-posterior
ROA	Right occiput anterior
ROCG	Royal college of obstetrics and gyneacology

Introduction

Episiotomy is the surgical enlargement of the vaginal orifice by an incision of the perineum during the second stage of labor or just before delivery and requires repair by suturing (***Thacker and Banta, 1983***).

During the 1970s, episiotomies were performed on almost all women having their first delivery in order to prevent severe perineal tears and make repair easier (***Cunningham et al., 2005).***

Traditionally, physicians have used episiotomies in an effort to deflecting the cut in the perineal skin away from the anal sphincter muscle, as control over stool (faeces) is an important function of the anal sphincter, i.e. lessen perineal trauma, minimize postpartum pelvic floor dysfunction, and as muscles have a good blood supply, by avoiding damaging the anal sphincter muscle, reduce the loss of blood during delivery, and protect against neonatal trauma. Episiotomy is employed to obviate issues such as

post-partum pain, incontinence, and sexual dysfunction (***Thacker and Banta, 1983***).

Obstetric anal sphincter injuries (OASIs) are the leading cause of anal incontinence in women. Episiotomies with a post delivery suture angle of less than 30° to the midline are more likely to injure the anal sphincter directly, while those with a suture angle of more than 60° are associated with increased incidence of OASIs, as they do not relieve the pressure on the perineum. A safe zone of 40°–60° has been proposed ***(Goldberg et al, 2003, Hopkins et al, 2005).***

Recently, a new type of episiotomy scissors (Episcissors-60®; MedInvent, LLC, Romsey, UK) were introduced that direct the episiotomy at 60° to the perineal midline at the time of cutting. These were a modification of the Mayo scissors with a guide limb that points toward the anus. A median angle of 43° was achieved in a case series of Caucasian women undergoing instrumental deliveries. More recently, another version of the Episcissors-60 was commercially introduced with blades angled at 60° to the scissors shaft ***(Freeman et al, 2014).***

There are different types of assisted vaginal delivery with forceps.

Relative indications include:

- Delay or maternal exhaustion in the second stage of labour.
- Dense epidural block with diminished urge to push.
- Rotational instrumental delivery for malpositioned fetus.
- Suspected fetal distress ***(Roshni and Deirdre, 2004).***

Specific indications:

- Delivery of the head at assisted breech delivery (singleton or twin)
- Assisted delivery of preterm infant (< 34 weeks' gestation)
- Controlled delivery of head at caesarean section.
- Assisted delivery with a face presentation.
- Assisted delivery with suspected coagulopathy or thrombocytopenia in fetus.

- Instrumental delivery for maternal medical conditions that preclude pushing.
- Instrumental delivery under general anaesthesia.
- Cord prolapse in the second stage of labour ***(Roshni and Deirdre, 2004).***

Our concern in this study is the low forceps delivery, when the baby's head is at +2 station or lower. There is no restriction on rotation for this type of delivery ***(O'Mahony et al, 2010).***

It was reported that during low forceps delivery with restrictive use of episiotomy may decrease the rate of tear, reduce the amount of hemorrhage, minimize maternal injury, relieve pain and have no adverse effects on neonatal morbidities. It improves the quality and demonstrates the concept of mini-invasiveness so that it is worthy of wider promotions (***Zhu et al., 2015)***

In this study, we are going to compare the outcome of low forceps delivery after the use of the angled Episcissors-60 versus straight scissors.

Major risk factors for arrest of descent during the second stage of labor were nulliparity, fetal macrosomia, epidural analgesia, hydramnios, hypertensive disorders and gestational diabetes mellitus. These risk factors should be carefully evaluated during pregnancy in order to actively manage high-risk pregnancies ***(Feinstein U et al, 2002).***

AIM OF WORK

To evaluate the extent of vaginal and perineal trauma using the angled Episcissors-60 versus straight scissors during assisted forceps delivery. Also, assessment of neonatal outcome including apgar score and neonatal birth trauma.

***Research hypothesis*:** Forceps delivery with the use of the angled Episcissors-60 may be the same complications as mediolateral episiotomy with the use of straight scissors as regards unintended extension of episiotomy.

***Research question*:** Is the delivery of the fetal head using forceps with the use of the angled Episcissors-60 the same as mediolateral episiotomy with the use of straight scissors regarding unintended extension, need for additional stitches and fetal complications ?

Anatomy

The female reproductive system can be separated into the lower genital tract and the upper genital tract. The lower genital tract includes the vulva and the vagina. The vulva, otherwise referred to as the external female genitalia, include the mons pubis, labia majora, labia minora, clitoris, vestibule, vestibular bulb and the greater vestibular glands (Bartholin's glands) **(Standring, 2008; Hollinshead, 1956; Romanes, 1972).**

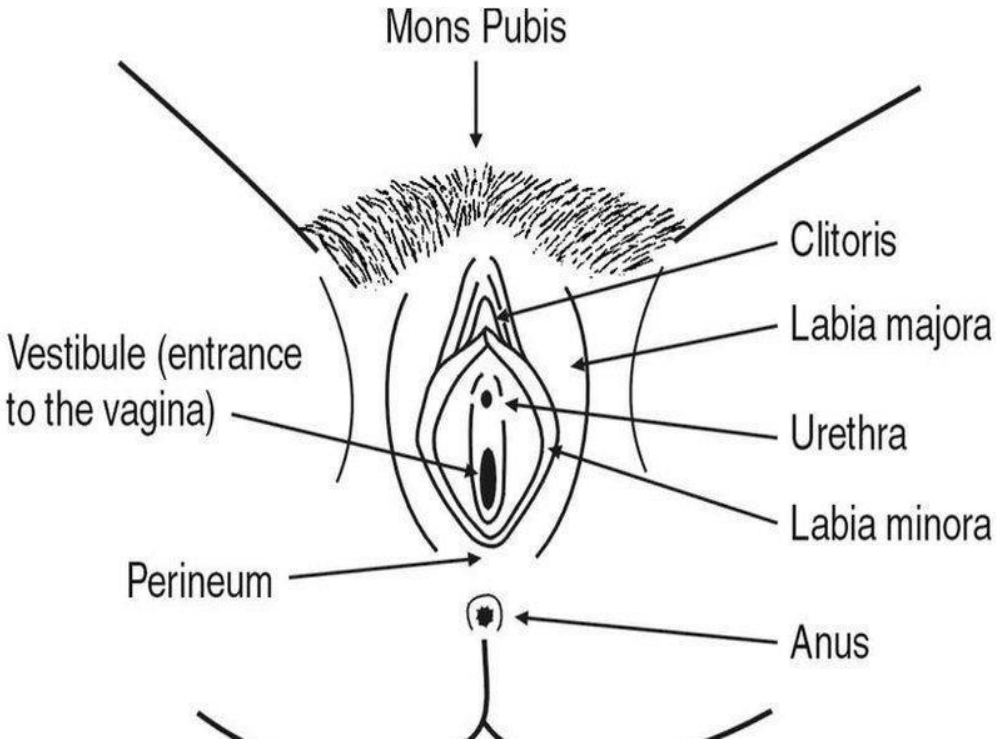

Fig1: Anatomy of external female genitalia **(Standring, 2008)**

The labia majora are two longitudinal folds of skin that run from their anterior portion at the mons pubis to their posterior position at the perineum. The anterior end of the labia majora, in comparison to the posterior end, is thicker and joins to form the anterior commissure with an

elevation over the mons pubis. At the posterior end they do not join but merge with the adjacent skin structures. The skin between the separate posterior ends forms a ridge, the posterior commissure, which covers the perineal body and is the posterior limit of the vulva. The posterior commissure is located approximately 2.5-3 cm from the anus and is termed the 'gynecological' perineum **(Standring, 2008; Hollinshead, 1956; Romanes, 1972).** The labia minora are two cutaneous folds that lay between the two labia majora. They extend from the clitoris anterior to their posterior connection creating the fourchette, the anterior portion, and the frenulum, the posterior portion, of the labia, flanking the vaginal orifice **(Standring, 2008; Hollinshead, 1956; Romanes, 1972).**

The vestibule is a cavity that exists between the labia minora containing the vaginal and external urethral orifices and the openings of the two greater vestibular glands (Bartholin's glands). The muscle bulbospongiosus encircles the vestibule. Its anterior attachment is the symphysis pubis as it courses around the vestibule it attaches posteriorly to the perineal body. The perineal body is defined as an aggregation of fibromuscular tissue located midline between the anal and urogenital triangle. The anterior portion of the perineal body receives contributions from the deep transverse\ perinea, the superficial transverse perinea and the bulbospongiosus. The posterior aspect of the perineal body is comprised of fibers from the middle part of the external anal sphincter and the conjoint longitudinal coat **(Standring, 2008; Hollinshead, 1956; Romanes,1972).**

The bulbs of the vestibule are two elongated masses of erectile tissue approximately 3 cm long, which lie on each side of the vestibule. They connect at their anterior end by the pars intermedia. At the posterior end