

Incidence of Ureteric injury in complicated cesarean section and late complications

¹Dr. Alaa Hussain, ²Dr. Muhanad Abduredha, ³Dr. Mazin Addy

¹Gynecologist, F.I.C.M.S, ThiQar medical college .

²General surgeon, F.I.C.M.S, ThiQar medical college .

³urosurgeon, F.I.C.M.S, ThiQar medical college .

Abstract:

Background: Most common operation in gynecological department is c/s, high percentage of c/s are complicated resulting with many early and late complication, one of intraoperative complication is ureteric injury and or ureteric ligation.

Patients and methods: This study was done in Bint- AL-huda teaching hospital, AL-hussein teaching hospital, other hospitals of ThiQar governorate through 3 years between may 2011- may 2014 on 34 patients get ureteric injury in a complicated C/S discovered either intra operatively or as an early post operative complication with confirm diagnosis by IVU. those patients correct the defect by re anastomosis with ureteric catheterization for two months then follow up to detect any post operative ipsilateral renal complication.

Results: We get 26 patient (76.4%) was complain from intermittent ipsilateral renal symptoms, colicky pain in nature radiating to the back associated with nausea and vomiting, repeated U/S showing ipsilateral mild dilated PCS with chronic U.T.I in general urine examination.

Conclusion: Ureteric injury is a major complication in complicated C/S which lead to chronic complaining of the patients from chronic U.T.I and a sequence of ureteric stenosis in spite of introducing ureteric catheter, so we advise that in any complicated C/S we need a urosurgical doctor in addition to the gynecologist surgeon to avoid as much as possible ureteric injury.

Key word: ureteric injury/cesarean section

Aim of study: To assess the incidence of ureteric injury with a complicated C/S and late sequel of ureteric anastomosis .

INTRODUCTION

A Cesarean section (also C-section,) is a surgical procedure in which one or more incisions are made through a mother's abdomen (laparotomy) and uterus (hysterotomy) to deliver one or more babies, or, rarely, to remove a dead fetus. A late-term abortion using Caesarean section procedures is termed a hysterotomy abortion and is very rarely performed. The first modern Caesarean section was performed by Dr James Barry in Cape Town, South Africa on 25 July 1826.^[1]

A Caesarean section is usually performed when a vaginal delivery would put the baby's or mother's life or health at risk, although in recent times it has also been performed upon request for childbirths that could otherwise have been natural.^{[2][3][4]} In recent years, the rate has risen to a record level of 46% in China and to levels of 25% and above in many Asian, European and Latin American countries.^[5] The rate has increased significantly in the United States, to 33 percent of all births in 2011, up from 21 percent in 1996, and in the rate in 2009 varied widely between hospitals (ranging from 6.9% to 69.9% of births).^{[6][7]} Across Europe, there are significant differences between countries: in Italy the Caesarean section rate is 40%, while in the Nordic countries it is only 14%.^[8] Medical professional policy makers find that elective cesarean can be harmful to the fetus and neonate without benefit to the mother, and have established strict guidelines for non-medically indicated cesarean before 39 weeks.^[9]

History;

Successful Caesarean section performed by indigenous healers in Kahura, Uganda. As observed by R. W. Felkin in 1879.

The mother of Bindusara (born c. 320 BCE, ruled 298 – c.272 BCE), the second Mauryan Samrat (emperor) of India, accidentally consumed poison and died when she was close to delivering him. Chanakya, the Chandragupta's teacher and adviser, made up his mind that the baby should survive. He cut open the belly of the queen and took out the baby, thus saving the baby's life.^{[10][11]}

According to the ancient Chinese Records of the Grand Historian, Luzhong, a sixth-generation descendant of the Yellow Emperor, had six sons, all born by "cutting open the body". The sixth son Jilian founded the House of Mi that ruled the State of Chu (c. 1030–223 BCE).^[12]

In the Irish mythological text the Ulster Cycle, the character Furbaide Ferbend is said to have been born by posthumous Caesarean section, after his mother was murdered by his evil aunt Medb.

The Babylonian Talmud, an ancient Jewish religious text, mentions a procedure similar to the Caesarean section. The procedure is termed *dyotzei dofen*.^[13]

Pliny the Elder theorized that Julius Caesar's name came from an ancestor who was born by Caesarean section, but the truth of this is debated (see the article on the Etymology of the name of Julius Caesar). The Ancient Roman Caesarean section was first performed to remove a baby from the womb of a mother who died during childbirth. Caesar's mother, Aurelia, lived through childbirth and successfully gave birth to her son, ruling out the possibility the Roman ruler and general was born by Caesarean section.

The Catalan saint Raymond Nonnatus (1204–1240), received his surname—from the Latin *non-natus* ("not born")—because he was born by Caesarean section. His mother died while giving birth to him.^[14]

An early account of Caesarean section in Iran is mentioned in the book of Shahnameh, written around 1000 AD, and relates to the birth of Rostam, the national legendary hero of Iran.^{[23][24]} According to the Shahnameh, the Simurgh instructed Zal upon how to perform a Caesarean section, thus saving Rudaba and the child Rostam.^[15]

Caesarean section usually resulted in the death of the mother; the first recorded incidence of a woman surviving a Caesarean section was in the 1580s, in Siegershausen, Switzerland: Jakob Nufer, a pig gelder, is supposed to have performed the operation on his wife after a prolonged labor.^[16] However, there is some basis for supposing that women regularly survived the operation in Roman times.^[17] For most of the time since the 16th century, the procedure had a high mortality rate. However, it was long considered an extreme measure, performed only when the mother was already dead or considered to be beyond help. In Great Britain and Ireland, the mortality rate in 1865 was 85%. Key steps in reducing mortality were:

There are several types of Caesarean section (CS). An important distinction lies in the type of incision (longitudinal or latitudinal) made on the uterus, apart from the incision on the skin.

Types of c/s

The classical Caesarean section involves a midline longitudinal incision which allows a larger space to deliver the baby. However, it is rarely performed today, as it is more prone to complications.

The lower uterine segment section is the procedure most commonly used today; it involves a transverse cut just above the edge of the bladder and results in less blood loss and is easier to repair.

An unplanned Caesarean section is performed once labor has commenced due to unexpected labor complications.

A crash/emergent/emergency Caesarean section is performed in an obstetric emergency, where complications of pregnancy onset suddenly during the process of labor, and swift action is required to prevent the deaths of mother, child(ren) or both.

A planned caesarean (or elective/scheduled caesarean), arranged ahead of time, is most commonly arranged for medical reasons and ideally as close to the due date as possible.

A Caesarean hysterectomy consists of a Caesarean section followed by the removal of the uterus. This may be done in cases of intractable bleeding or when the placenta cannot be separated from the uterus.

Traditionally, other forms of Caesarean section have been used, such as extraperitoneal Caesarean section or Porro Caesarean section.^[18]

Cesarean section can be performed with single or double layer suturing of the uterine incision.^[18] A Cochrane review came to the result that single layer closure compared with double layer closure was associated with a statistically significant reduction in mean blood loss.^[18]

Risks

Risks for the mother

The mortality rate for both Caesarian sections and vaginal birth, in the Western world, continues to drop steadily. In 2000, the mortality rate for Caesareans in the United States were 20 per

1,000,000.^[19] The UK National Health Service gives the risk of death for the mother as three times that of a vaginal birth.^[19] However, it is misleading to directly compare the mortality rates of vaginal and Caesarean deliveries. Women with severe medical conditions, or higher-risk pregnancies, often require a Caesarean section which can distort the mortality figures.

A study in the Canadian Medical Association Journal found the absolute difference in rates of severe maternal morbidity (e.g. cardiac arrest, wound hematoma, or hysterectomy) was small (18.3 additional cases in 1000 or three times the risk) and the difference in maternal mortality was nonsignificant, but this additional risk over vaginal delivery should be considered by women contemplating an elective Caesarean delivery and by their

physicians.^[20] there is another risk that may resulting with urological injury (bladder and /or ureter injury).^[20]

Anatomy of ureter; In human anatomy, the ureters are tubes made of smooth muscle fibers that propel urine from the kidneys to the urinary bladder. In the adult, the ureters are usually 25–30 cm (10–12 in) long and ~3–4 mm in diameter. Histologically, the ureter contains transitional epithelium and an additional smooth muscle layer in the more distal one-third to assist with peristalsis.

In humans, the ureters arise from the renal pelvis on the medial aspect of each kidney before descending towards the bladder on the front of the psoas major muscle. The ureters cross the pelvic brim near the bifurcation of the iliac arteries (which they cross anteriorly). This is a common site for the impaction of kidney stones (the others being the ureterovesical valve, where the ureter meets the bladder, and the pelviureteric junction, where the renal pelvis meets the ureter in the renal hilum). The ureters run posteroinferiorly on the lateral walls of the pelvis and then curve anteriomedially to enter the bladder through the back, at the vesicoureteric junction, running within the wall of the bladder for a few centimetres. The backflow of urine is prevented by valves known as ureterovesical valves.

In females, the ureters pass through the myometrium and under the uterine arteries on the way to the urinary bladder. An effective phrase for remembering this anatomical relationship is "water (ureters) under the bridge (uterine arteries or vas deferens)."^[21]

The ureter run downward and forwards 2 cm lateral to the cervix.^[21]

The ureters are also known for being extremely hard to work around during surgery and account for 80 percent of failed kidney transplants.^[22]

PATIENTS AND METHODS

This study done in AL- Nasiriya governorate through 3 years may 2011 to may 2014 on 365 patients who have complicated cesarean section (patients with previous multiple C/S, or with previous rapture uterus and repair or rapture bladder , patients with rapture uterus patients with multiple intra abdominal adhesion with distortion of normal pelvic anatomy) ,those patients collected from AL- Nasiriya governorate ,Al hussein teaching hospital & Bint-Al huda teaching hospital. 34 patients (9.7%) were get ureteric injury with complicated CS done by different gynecologist surgeon(.some of those patients discovered intra-operatively other at early post operative time when patients complaining from ipsilateral renal colic confirm diagnosis by U/S, we found dilated PCA with proximal hydroureter. IVU showing ureteric stenosis at the site of injury and reanastomotic site. in Intra operative diagnosis of injury send for urosurgical doctor to correct the problem ,we waiting for a time till the urosurgical team reach to theater then do isolation of the ureter ,reanastomosis by vicryl 3/0 ureteric catheter and fallow up ,other patients who diagnosed at an early post operative period did the operation at urological department directly then fallow up.

RESULTS

34 patients (9.6%) from 365 patients with complicated cesarean section have ureteric injury .those patients distributed according to area in AL-Nasiriya city 18 patients (52.9%) ,AL-shatra 7 patients (20.5%) ,Suq Al-shuyukh 8 patients (23.5%).

after 3 months from operation we get 14 patients (41.1%) complaining from ipsilateral renal colic with mild dilated PCS ,12patients (35.3%) have moderate dilated PCS and 8 patients (23.5%) have no complain. all those patients 26 patients 76.4% in general urine exam we found pus cells ++ WBC ++ and little turbid color urine.

At 6 months post operatively we found 17 patients (50%) have moderate dilated P.C.S, 9 patients (26.4%)have mild dilated P.C.S. ,in general urine exam there is pus cells +++ turbid in color and no R.B.C in all 26 patients .while still 8 patients (23.5) not complaining with normal U/S ,and G.U.E

after 1.5 year post operatively we found that 4 patients 11.7% have huge dilated P.C.S. by U/S and non function kidney by IVU, with 22 patients (64.7%) have moderate dilated PCS.

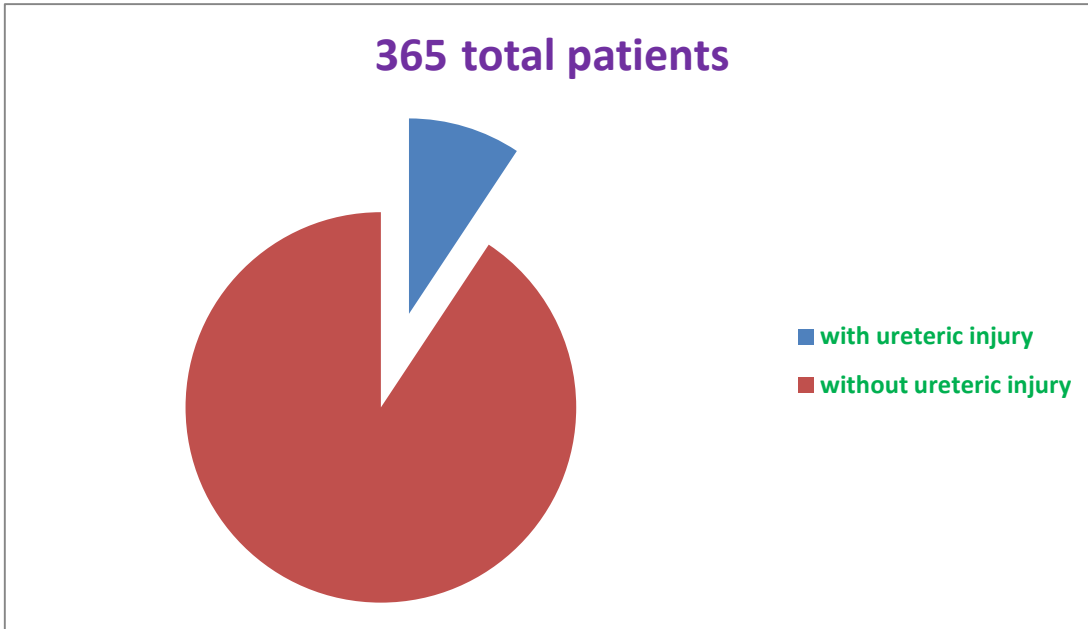
DISCUSSION

Ureteric injury with complicated cesarean section represent a serious complication which may lead to loss the ipsilateral kidney ,even with an early repair of the injury with reanastomosis and ureteric catheterization for two months but still there are many complication may occur post operatively as we see above with about 11.7% may get loss of kidney due to sever hydronephrosis finally nonfunctioning kidney. High incidence of ureteric injury in Bint AL-huda teaching hospital due to overload of patients who need cesarean section ,it's a centre of referring to all complicated cases.

CONCLUSION

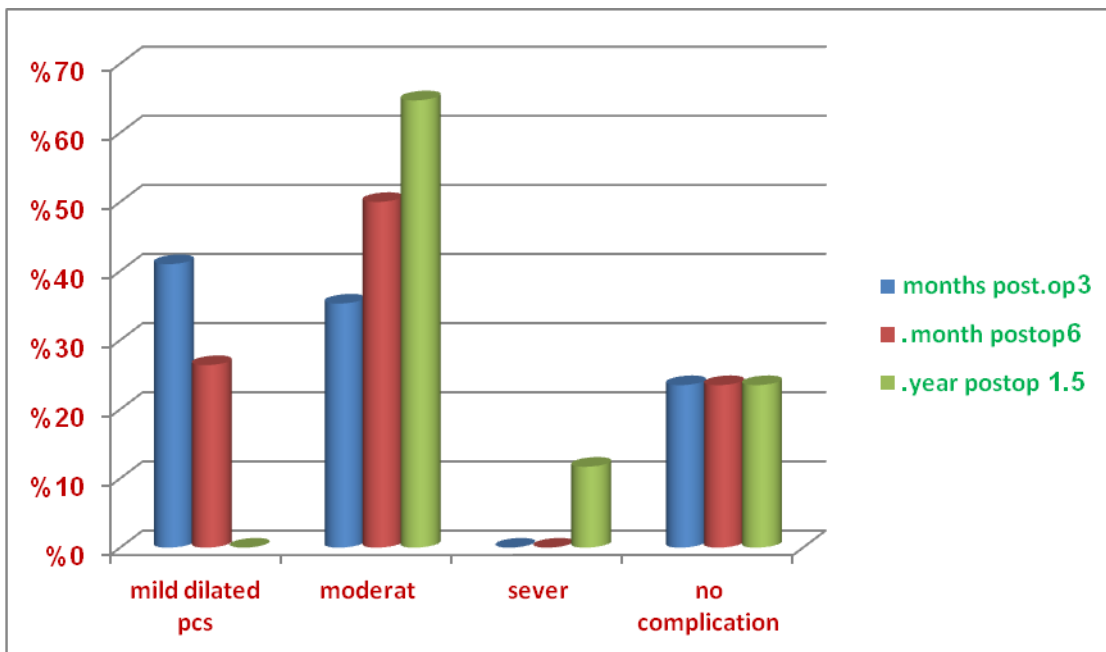
Because of high risk of ureteric injury with a complicated cesarean section which may lead to a serious complication as a late sequels even with an early discover injury and correct it so we advised that there must be an urosurgical doctor present with the gynecologist surgeon during the operation to decrease as much as possible urinary injury especially ureteric injury.

Paragraph 1:



Incidence of ureteric injury in complicated C/S

Paragraph 2 :



Post-operative sequali of ureteric injury in complicated caesarian section

Paragraph 3:

<i>Al Nasiryia city</i>	<i>alshatra</i>	<i>Suq alshuyukh</i>
18 patients	7 patients	8 patients
52.9%	20.5%	23.5%

Distribution of cases according to geographical area

REFERENCES

- [1.] Cronjé, H.S. (2012). "Clinical Obstetrics. A South African Perspective". 3rd Ed 3: 345.
- [2.] "Fear a factor in surgical births". The Sydney Morning Herald. 7 October 2007.
- [3.] "Kiwi caesarean rate continues to rise". Stuff.co.nz. 12 September 2007. Retrieved 22 September 2011.
- [4.] Finger, C. (2003). "Caesarean section rates skyrocket in Brazil. Many women are opting for Caesareans in the belief that it is a practical solution". *Lancet* 362 (9384): 628.doi:10.1016/S0140-6736(03)14204-3. PMID 12947949.
- [5.] C-section rates around globe at 'epidemic' levels". AP /msnbc.com. 12 January 2010. Retrieved 21 February 2010.
- [6.] Kozhimannil, Katy Backes; Michael R. Law, Beth A. Virnig (March 2013). "Cesarean Delivery Rates Vary Tenfold Among US Hospitals; Reducing Variation May Address Quality And Cost Issues". *Health Aff* 32 (3): 527–535.doi:10.1377/hlthaff.2012.1030. Retrieved 7 March 2013.
- [7.] TAVERNISE, SABRINA (March 4, 2013). "Caesarean Deliveries Vary Widely, Study Finds". *New York Times*.
<http://www.bbc.co.uk/news/health-15840743>
- [8.] Elimination of Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age". Retrieved 2012-07-13.
- [9.] Wilhelm Geiger (1908). *The Dīpavaṃsa and Mahāvāṃsa and their historical development in Ceylon*. Ethel M. Coomaraswamy. H. C. Cottle, Government Printer, Ceylon. p. 40. OCLC 559688590.
- [10.] Lurie, Samuel (2005). "The changing motives of cesarean section: from the ancient world to the twenty-first century". *Archives of Gynecology and Obstetrics (Springer)*271 (4): 281–285. doi:10.1007/s00404-005-0724-4.PMID 15856269.
- [11.] Sima Qian. "楚世家 (House of Chu)". *Records of the Grand Historian (in Chinese)*. Retrieved 3 December 2011.
- [12.] "St. Raymond Nonnatus". *Catholic Online*. Retrieved 2006-07-26.
- [13.] Shabbazi, A. Shapur. "RUDABA". *Encyclopedia Iranica*. Retrieved 2009-07-19.
- [14.] TORPIN R, VAFAIE I. The birth of Rustam. An early account of cesarean section in Iran. *Am J Obstet Gynecol*. 1961 Jan;81:185-9.
- [15.]Conner, Clifford D., *A People's History Of Science : Miners, Midwives, And "low Mechanics"*, pg 3
- [16.] Boss, J (1961). "THE ANTIQUITY OF CAESAREAN SECTION WITH MATERNAL SURVIVAL: THE JEWISH TRADITION". *Medical history* 5 (2): 117–31.doi:10.1017/S0025727300026089. PMC 1034600.PMID 16562221.
- [17.] Dodd, J. M.; Anderson, E. R.; Gates, S. (2008). "Surgical techniques for uterine incision and uterine closure at the time of caesarean section". In Dodd, Jodie M. *Cochrane Database of Systematic Reviews*.doi:10.1002/14651858.CD004732.pub2. edit
- [18.] Pai, Madhukar (2000). "Medical Interventions: Caesarean Sections as a Case Study". *Economic and Political Weekly* 35 (31): 2755–61.
- [19.]"Caesarean Section". *NHS Direct*. Retrieved 2006-07-26.
- [20.] Liu S, Liston RM, Joseph KS, Heaman M, Sauve R, Kramer MS (2007).
- [21.] Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term.*CMAJ* 176 (4): 455-60.doi:10.1503/cmaj. 060870.PMC1800583.PMID 17296957.