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REVIEW ARTICLE **OPEN ACCESS**

Overview of the Cesarean Section

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ABSTRACT
According to the findings of certain studies, choosing to have a C-section instead of giving birth naturally is often seen as a practical and low-risk alternative to giving birth naturally. However, research has also shown that there are certain circumstances in which it may be technically problematic, which may result in the emergence of possible health concerns for the mother as well as the child. Thus in our review, we have discussed C-section indication, contraindication, equipment, prevention, recovery, preoperative care and techniques.
Key words: *C-Section, Indication, Contraindication, Equipment, Prevention, Recovery, Techniques, pre-operative care.*

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INTRODUCTION

Studies have shown that Caesarean section, also known as a C-section, is a surgical intervention in which one or more infants are delivered by creating an incision in the mother's abdominal region. This procedure is often performed because of the inherent risks associated with vaginal birth for both the newborn and the mother.[1] According to many studies, surgery may be necessary due to many factors, such as obstructed labor, twin pregnancy, maternal hypertension, breech delivery, shoulder presentation, and issues with the placenta or umbilical cord. Additional information is provided below.[1] Furthermore, studies have been concluding that, a c-section birth may be necessary in some circumstances, taking into account factors such as the mother's pelvic structure or her history of prior C-sections. According to the World Health Organization's recommendations, a c-section should only be performed when there is a medical need.[2] Thus in our review we have discussed about C-section.

INDICATION [3,4]

1. "C- delivery
2. Maternal request
3. Pelvic deformity
4. Cephalopelvic disproportion
5. Previous perineal trauma
6. Prior pelvic or anal/rectal reconstructive surgery
7. Herpes simplex or HIV infection
8. Cardiac or pulmonary disease
9. Cerebral aneurysm or arteriovenous malformation
10. Pathology requiring concurrent intraabdominal surgery
11. Perimortem cesarean
12. Abnormal placentation
13. Placental abruption
14. Prior hysterotomy procedure
15. Prior full-thickness myomectomy
16. H/o uterine incision dehiscence
17. Invasive cervical cancer
18. Prior trachelectomy
19. Genital tract obstructive mass
20. Permanent cerclage
21. Nonreassuring fetal status
22. Abnormal fetal heart tracing
23. Umbilical cord prolapses

24. Failed operative vaginal delivery
25. Malpresentation
26. Macrosomia
27. Congenital anomaly
28. Thrombocytopenia
29. Prior neonatal birth trauma"

CONTRAINDICATION [5]
1. If pregnant lady refuses.
2. Relatives doesnt want to go for c- section.
3. Patient lady may have severe coagulopathy
4. Cases, where vaginal delivery is preferred
5. Patient have extensive surgery h/o abdomin
6. In case of fetal demise

EQUIPMENT [5,6]
1. Cutting instrument
2. Surgical suite should have surgical bed or table.
3. Safety strap or blet to ensure patient does not fall off the table
4. Ramp (to achieve left lateral tilt of patient) (rolled blanket)
5. Surgical step stools (both surgeon & assistant)
6. Blanket warmer
7. Indwelling catheter (patient bladder before surgery)
8. Overhead lighting (proper illumination)
9. Sutures
10. Gloves
11. Gowns
12. Wound Dressing
13. Hemostatic Agent
14. Anesthesia
15. Monitors for vital signs
16. Organizational cabinets
17. Airway equipment
18. Surgical tray (kinds of scissor {bandage, Metzenbaum,Straight & curved Mayo},several kinds of clamps (Kelly Kocher, Allis, Babcock), Sponge Forcep, several kinds of tissue forcep(Adson, Russian, Ferris Smith, Smooth), Retractors (Bladder blade, Army Navy , Rochardson),Knife handles, needle drivers, suction (Yankauer or Poole) or other instrumnets.

PREVENTION

Studies have also shown that it is widely acknowledged that the rate of C-sections is higher than necessary in many countries. Researchers have concluded that physicians are advised to actively reduce the rate, as a c-section rate exceeding 10–15% does not lead to lower maternal or infant mortality rates. However, there is some evidence suggesting that a higher rate of 19% may lead to improved outcomes.[7] Furthermore, studies have shown that engaging in physical activity among pregnant women reduces the likelihood.[8] In addition to the studies, findings from a comprehensive analysis conducted in 2021, which examined the available information on outpatient cervical ripening, revealed that the likelihood of cesarean delivery with adverse effects for both the mother and child was not substantially different from that seen in an inpatient environment, especially for women with low-risk pregnancies.[9]

TECHNIQUES [5]
1. Pfannenstiel-Kerr method
2. Joel-Cohen method
3. Misgav-Ladach method
4. Modified Misgav-Ladach method

1. "Pfannenstiel-Kerr Method
   a. Pfannenstiel skin incision
   b. Sharp dissection of the subcutaneous layer
   c. Sharp extension of the fascial opening

d. Sharp entry into the peritoneum
e. Sharp superficial then blunt entry into the uterus
f. Manual removal of the placenta
g. Single-layer interrupted closure of the uterus
h. Closure of the peritoneum
i. Interrupted closure of the fascia
j. Continuous suture of the skin"

2. **"Joel-Cohen Method**
   a. Joel-Cohen skin incision
   b. Blunt dissection of the subcutaneous layer
   c. Blunt extension of the fascial opening
   d. Blunt entry into the peritoneum
   e. Sharp superficial then blunt entry into the uterus
   f. Spontaneous removal of the placenta
   g. Single-layer interrupted closure of the uterus
   h. Non-closure of the peritoneum
   i. Interrupted closure of the fascia
   j. Continuous suture of the skin"
3. **"Misgav-Ladach Method**
   a. Joel-Cohen skin incision
   b. Blunt dissection of the subcutaneous layer
   c. Blunt extension of the fascial opening
   d. Blunt entry into the peritoneum
   e. Sharp superficial then blunt entry into the uterus
   f. Manual removal of the placenta
   g. Single-layer running closure of the uterus
   h. Non-closure of the peritoneum
   i. Continuous closure of the fascia
   j. Mattress suture closure of the skin"
4. **"Modified Misgav-Ladach Method**
   a. Pfannenstiel skin incision
   b. Blunt dissection of the subcutaneous layer
   c. Blunt extension of the fascial opening
   d. Blunt entry into the peritoneum
   e. Sharp superficial then blunt entry into the uterus
   f. Spontaneous removal of the placenta
   g. Single-layer running closure of the uterus
   h. Closure of the peritoneum
   i. Continuous closure of the fascia
   j. Continuous suture of the skin"

RECOVERY

Research has indicated that women who undergo a cesarean section may experience a delay or absence of bowel movements for several hours or even days following the procedure. Studies have shown that during this period, women may experience symptoms such as vomiting, nausea, and stomach pain. Furthermore, studies have shown that this condition frequently gets better without intervention.[10] Additionally, studies have shown that a significant percentage of women who undergo a cesarean section for non-emergency reasons experience difficulties managing the subsequent pain.[11] Additionally, research has shown that complementary and alternative therapies (such as acupuncture) may help with caesarean-related pain, even though there isn't a lot of proof that they do.[12] Studies have also shown that, even after several months, it is common for patients to experience ongoing discomfort in the abdomen, wound, and back following a cesarean section. Anti-inflammatory medicines like ibuprofen and naproxen may assist.[13] Additionally, studies have shown that, following a cesarean section, it is important for women to avoid lifting anything heavier than their newborn for a minimum of two weeks. In addition to this, studies concluded that for certain women, breastfeeding can cause discomfort. However, studies have also shown that there are two positions, the football hold and the side-lying position, that may provide relief.[13] Additionally, studies concluded that during the first six months after giving birth, women who had cesareans may experience more discomfort that hinders their ability to

resume their usual activities compared to women who gave birth vaginally. Furthermore, studies have concluded that after six months, the level of pain during and after sexual activity is comparable to the pain experienced after vaginal birth.[13]

WHY DO PEREFERNCE FOR C-SECTION IS MORE?

Studies have shown that the desire to avoid damage to the pelvic floor is a common justification given for seeking a caesarean section, and it was also the rationale that guided the decisions of the female obstetricians in London who participated in the research that was discussed earlier.[14] Studies have concluded that strong societal and social influences often act to moderate people's conviction that giving birth always causes damage to the pelvic floor and that caesarean sections are the only way to reliably avoid future incontinence, prolapse, and sexual dysfunction.[14] Also, studies have shown that the cause of pelvic floor dysfunction that happens after pregnancy is controversial, and the issue may have its roots in the pregnancy itself rather than in the labor and delivery process.[15] However, studies have also shown that women who have never had children have pelvic organ prolapse and urinary incontinence, while many women who have had multiple children do not have these problems. Evidence suggests that multiparity is a risk factor since it has been there for a long time.[16]

Studies have also found that, on the basis of these data, it would seem that the risk of having pelvic floor dysfunction may be rather variable from one individual to the next.[17,18] Studies have also concluded that there is always a chance that the kind of labor, when it will start, and how long it will last will be a surprise. Studies have also concluded that they have greater liberty to schedule their time away from work in whichever manner they see appropriate since they have the option of choosing to have a caesarean section as an elective operation.[18] Furthermore, studies have found that it prevents "wasting" maternity leave, which some women who believe they are unable to continue working at that point in their pregnancies may need to use up in the latter stages of their pregnancies. Studies also concluded that this is because it allows such women to continue to work throughout their pregnancies. Studies have also concluded that this is due to the fact that it dissuades women from continuing to feel that they are unable to continue working at that point in their pregnancies, which in turn helps them continue to believe that they are unable to continue working.[19] Furthermore, studies have concluded that, because most pregnant women are aware of the incapacitating effects that major surgery may have on their bodies, it is unlikely that this is the primary motivation for maternal requests for c-sections.[19] Studies have also concluded that, despite the fact that elective cesarean sections may provide some convenience, it does not seem that this is the primary reason for maternal requests for cesarean sections.[19] Studies have also concluded that for nulliparous women who have never given birth before, the thought of labor and the accompanying delivery may be inherently nerve-wracking.[20] Additionally, studies have also concluded that women who suffer from the pathological dread of labor and delivery, sometimes referred to as tokophobia, make up a relatively tiny portion of the population of women who request elective cesarean sections.[20]

Studies have also found that, as a result of childhood sexual abuse, rape, or despair, tokophobia may develop over time. Studies have also concluded that, as a result of a previous traumatic event, a person may acquire secondary cases of tokophobia in the future.[21] Furthermore, studies have also concluded that when planning a caesarean section delivery, the vast majority of pregnant moms who desire a planned delivery would often consult with astrologers or priests to determine the ideal time to perform the procedure.[21] Several religious communities primarily uphold this doctrine. [21] Studies have also concluded that women who have had a previous vaginal delivery that resulted in an emergency caesarean section often do not prefer vaginal delivery as an option.[22] Furthermore, studies have concluded that this is due to the fact that it was medically essential to deliver the baby by caesarean section.[22] Following a c-section, studies have also concluded that the great majority of gynecologists in the Indian context do not prefer to have another vaginal delivery.[22] Additionally, studies have also concluded that there is a subset of multiparous women who desire to undergo bilateral tubectomy at the same time, and these are the women who request to have a cesarean section rather than giving birth naturally. These women are known as "tubectomy-seeking multiparous women."[22]

PRE-OPERATIVE CARE

1. Prophylactic Antibiotic

Additionally, studies have shown that giving all women undergoing CS a single dose of ampicillin or a first-generation cephalosporin, like cephazolin, is a good idea. This is because it significantly lowers the risk of infection, with more than 60% less endometritis, 25% fewer wound infections in the elective setting, and 65% fewer in the emergency setting. It also lowers the risk of fever and urinary tract infections (UTIs).[23] Researchers have also found that this should be given 15 to 60 minutes before the

skin incision because it lowers the risk of endometritis and overall morbidity from infection without changing the risk of neonatal sepsis or admissions to the neonatal intensive care unit (NICU).[24] Studies have further concluded that results are not enhanced by administering additional doses, and up until very recently, there was no evidence to suggest using a more broad-spectrum regimen.[25]
Studies have shown that a significant prospective multicenter randomized controlled trial (RCT) investigating the addition of azithromycin 500mg IV just made its findings available to the general public. Studies have also concluded that a total of 2,000 women took part in this randomized controlled trial. Furthermore, studies have shown that the incidence of composite infectious outcomes for the group that received azithromycin decreased by half, from 12% to 6.1%, according to the findings of this study.[26] However, studies have further concluded that the trial group was high-risk since it was made up entirely of women who had previously had an emergency cesarean section, and more than seventy percent of the women in the group had a body mass index that was more than 30.[25] Besides that, research has shown that 2 grams of cephazolin is not enough to reach the minimum inhibitory concentration in obese women. This begs the question of whether a higher dose of cephazolin would have the same effect on lowering infectious morbidity. Studies have come to the conclusion that this is because the results show that this group of women does not achieve the least inhibitory concentration even when they consume 2 grams.[27]

2. Thromboprophylaxis

Studies have shown that this field remains the second-greatest cause of direct maternal death in Australia[28] and is a significant contributor to the increased mortality rate that is linked with CS.[29] As a result, studies have also concluded that it is imperative that a consistent assessment of the VTE risk for each woman be performed. Other than this, studies have also concluded that a number of guidelines, such as those produced by McLintock et al., have been created largely based on professional opinion.[30] Studies have also concluded that it is recommended that compression stockings, early mobilization, and proper hydration be adopted as the bare minimum for any and all women who are scheduled to undergo CS.[31] In addition, studies have also concluded that it is recommended that all women who have had an emergency CS get chemical thromboprophylaxis for at least five days or until they are totally ambulatory. Studies have also concluded that, as a result, it is imperative that a consistent assessment of the VTE risk for each woman be performed.[25]

3. Vaginal Preparation

Studies have shown that the use of preoperative vaginal preparation with povidone-iodine solution was the subject of a Cochrane review, which comprised four trials with a total of 1,198 participants. Studies have also found that this practice greatly lowered the incidence of endometritis. This was especially true for women whose membranes had ruptured (1.4% vs. 15.4%, RR 0.13). According to the study, the rates of endometritis have significantly dropped, with a reduction of 5.2% compared to a reduction of 9.4%, yielding a relative risk of 0.57. [32]

4. Indwelling Catheter

Studies have shown that it's noteworthy to note that there are certain statistics that provide support for the idea that a patient shouldn't have an indwelling catheter (IDC) placed before CS. This is a result of the fact that the risk of urinary tract infections (UTIs) is significantly reduced (0.5% vs. 5.7%), and there is no difference in the incidence of urinary retention. However, as of right now, the studies that have been carried out have been underpowered to tell whether or not there is a difference in the result of urinary tract injury, which is a very uncommon but significant problem. [24]

5. Skin Prepraration & Hair Removal

According to the findings of a Cochrane review that was conducted in 2014, there was a paucity of high-quality evidence to guide our practice with regard to skin preparation until very recently. This was the case until very recently.[33] Since then, two more randomized controlled trials (RCTs) have been done to compare how well iodine-alcohol and chlorhexidine-alcohol work. One of these randomized controlled trials (RCTs) [34] found that the rate of surgical site infection did not change. The other, which was published not long ago and looked at 1147 patients, found that the rate of surgical site infection went down with the chlorhexidine-alcohol preparation (4.0% vs. 7.3%, RR 0.55, P = 0.02).[27] Studies have also concluded that it would appear that the evidence that already exists would provide support for the use of the chlorhexidine-alcohol preparation. It is recommended that, when preoperatively, it is essential to remove hair by clipping rather than shaving, since this is related to decreased surgical site infections. Shaving just eliminates a small portion of the hair compared to clipping.[25]

CONCLUSION

C-section is one of the widely performed surgical procedure in the field of obstetrics. In certain situations, there is a higher likelihood of maternal and fetal complications associated with the treatment. However,

this is not an exceptionally rare event. These situations involve challenges in reaching the lower uterine region, performing cesarean sections for fetal extraction, or potential organ damage. Having a solid understanding of potential technical challenges and the associated risks allows the surgeon to develop appropriate methods.

REFERENCES

1. Caughey, A. B., Cahill, A. G., Guise, J. M., Rouse, D. J., & American College of Obstetricians and Gynecologists. (2014). Safe prevention of the primary cesarean delivery. American journal of obstetrics and gynecology, 210(3), 179-193.
2. Betrán, A. P., Torloni, M. R., Zhang, J. J., Gülmezoglu, A. M., Aleem, H. A., Althabe, F., ... & Zongo, A. (2016). WHO statement on caesarean section rates. Bjog, 123(5), 667.
3. Barber, E. L., Lundsberg, L. S., Belanger, K., Pettker, C. M., Funai, E. F., & Illuzzi, J. L. (2011). Indications contributing to the increasing cesarean delivery rate. Obstetrics & Gynecology, 118(1), 29-38.
4. Boyle, A., Reddy, U. M., Landy, H. J., Huang, C. C., Driggers, R. W., & Laughon, S. K. (2013). Primary cesarean delivery in the United States. Obstetrics and gynecology, 122(1), 33.
5. Sung S, Mahdy H. (2023) Cesarean section. InStatPearls Jul 9.
6. Kasagi, Y., Okutani, R., & Oda, Y. (2015). Specialized operating room for cesarean section in the perinatal care unit: a review of the opening process and operating room management. Journal of anesthesia, 29, 149-151.
7. Molina, G., Weiser, T. G., Lipsitz, S. R., Esquivel, M. M., Uribe-Leitz, T., Azad, T., ... & Haynes, A. B. (2015). Relationship between cesarean delivery rate and maternal and neonatal mortality. Jama, 314(21), 2263-2270.
8. Domenjoz, I., Kayser, B., & Boulvain, M. (2014). Effect of physical activity during pregnancy on mode of delivery. American journal of obstetrics and gynecology, 211(4), 401-e1.
9. McDonagh, M., Skelly, A. C., Hermesch, A., Tilden, E., Brodt, E. D., Dana, T., ... & Hart, E. (2021). Results Overview. In Cervical Ripening in the Outpatient Setting [Internet]. Agency for Healthcare Research and Quality (US).
10. Morais, E. P. G., Riera, R., Porfírio, G. J., Macedo, C. R., Vasconcelos, V. S., de Souza Pedrosa, A., & Torloni, M. R. (2016). Chewing gum for enhancing early recovery of bowel function after caesarean section. Cochrane Database of Systematic Reviews, (10).
11. Yang, M. M., Hartley, R. L., Leung, A. A., Ronksley, P. E., Jetté, N., Casha, S., & Riva-Cambrin, J. (2019). Preoperative predictors of poor acute postoperative pain control: a systematic review and meta-analysis. BMJ open, 9(4), e025091.
12. Allen, J., Mak, S. S., Begashaw, M., Larkin, J., Miake-Lye, I., Beroes-Severin, J., ... & Shekelle, P. G. (2022). Use of acupuncture for adult health conditions, 2013 to 2021: a systematic review. JAMA Network Open, 5(11), e2243665-e2243665.
13. Lee, Y. M. (2012, June). Delivery of twins. In Seminars in Perinatology (Vol. 36, No. 3, pp. 195-200). WB Saunders.
14. Abu-Heija, A. T., Jallad, M. F., & Abukteish, F. (2000). Maternal and perinatal outcome of pregnancies after the age of 45. Journal of Obstetrics and Gynaecology Research, 26(1), 27-30.
15. Kapoor, D. S., & Freeman, R. M. (2008). Pregnancy, childbirth and urinary incontinence. In Therapeutic Management of Incontinence and Pelvic Pain: Pelvic Organ Disorders (pp. 143-146). London: Springer London.
16. Mant, J., Painter, R., & Vessey, M. (1997). Epidemiology of genital prolapse: observations from the Oxford Family Planning Association Study. BJOG: An International Journal of Obstetrics & Gynaecology, 104(5), 579-585.
17. Twiss, C., Triaca, V., & Rodríguez, L. V. (2007). Familial transmission of urogenital prolapse and incontinence. Current Opinion in Obstetrics and Gynecology, 19(5), 464-468.
18. Miedel, A., Tegerstedt, G., Mæhle-Schmidt, M., Nyrén, O., & Hammarström, M. (2009). Nonobstetric risk factors for symptomatic pelvic organ prolapse. Obstetrics & Gynecology, 113(5), 1089-1097.
19. Weaver, J., Statham, H., & Richards, M. (2001). High caesarean section rates among women over 30. High rates may be due to perceived potential for complications. BMJ (Clinical research ed.), 323(7307), 284-285.
20. Hofberg, K., & Brockington, I. (2000). Tokophobia: an unreasoning dread of childbirth: a series of 26 cases. The British Journal of Psychiatry, 176(1), 83-85.
21. Gauquelin, M. (1973). Cosmic influences on human behavior. (No Title).
22. Panda, S., Jha, V., & Singh, A. S. (2013). Review of cesarean section on maternal request in a tertiary care institute; scenario in developing country. Kathmandu University Medical Journal, 11(4), 349-354.
23. Berghella, V., Baxter, J. K., & Chauhan, S. P. (2005). Evidence-based surgery for cesarean delivery. American Journal of obstetrics and gynecology, 193(5), 1607-1617.
24. Dahlke, J. D., Mendez-Figueroa, H., Rouse, D. J., Berghella, V., Baxter, J. K., & Chauhan, S. P. (2013). Evidence-based surgery for cesarean delivery: an updated systematic review. American journal of obstetrics and gynecology, 209(4), 294-306.
25. Hills, F.(2016) Caesarean section: an evidence review.
26. Tita, A. T., Szychowski, J. M., Boggess, K., Saade, G., Longo, S., Clark, E., ... & Andrews, W. (2016). Adjunctive azithromycin prophylaxis for cesarean delivery. New England journal of medicine, 375(13), 1231-1241.
27. Swank, M. L., Wing, D. A., Nicolau, D. P., & McNulty, J. A. (2015). Increased 3-gram cefazolin dosing for cesarean delivery prophylaxis in obese women. American journal of obstetrics and gynecology, 213(3), 415-e1.
28. Johnson, S., Bonello, M. R., Li, Z., Hilder, L., & Sullivan, E. (2014). Maternal deaths in Australia 2006-2010. Maternal deaths series no. 4.
29. Deneux-Tharaux, C., Carmona, E., Bouvier-Colle, M. H., & Bréart, G. (2006). Postpartum maternal mortality and cesarean delivery. Obstetrics & Gynecology, 108(3 Part 1), 541-548.

30. McLINTOCK, C., Brighton, T., Chunilal, S., Dekker, G., McDONNELL, N., McRAE, S., ... & Young, L. (2012). Recommendations for the prevention of pregnancy-associated venous thromboembolism. Australian and New Zealand Journal of Obstetrics and Gynaecology, 52(1), 3-13.
31. McLINTOCK, C., Brighton, T., Chunilal, S., Dekker, G., McDONNELL, N., McRAE, S., ... & Young, L. (2012). Recommendations for the prevention of pregnancy-associated venous thromboembolism. Australian and New Zealand Journal of Obstetrics and Gynaecology, 52(1), 3-13.
32. Haas, D. M., Morgan, S., Contreras, K., & Kimball, S. (2020). Vaginal preparation with antiseptic solution before cesarean section for preventing postoperative infections. Cochrane Database of Systematic Reviews, (4).
33. Hadiati, D. R., Hakimi, M., Nurdiati, D. S., da Silva Lopes, K., & Ota, E. (2018). Skin preparation for preventing infection following caesarean section. Cochrane Database of Systematic Reviews, (10).
34. Ngai, I. M., Van Arsdale, A., Govindappagari, S., Judge, N. E., Neto, N. K., Bernstein, J., ... & Garry, D. J. (2015). Skin preparation for prevention of surgical site infection after cesarean delivery: a randomized controlled trial. Obstetrics & Gynecology, 126(6), 1251-1257.

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