Modifying The Caesarean Section, A Contemporary Approach

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Abstract

The Caesarean Section was modified out of necessity to face nowadays challenges in Obstetrics. The principles were to reduce bleeding, create a dry and calmed environment, and improve safety as well as parental perception. The methods used were retraction tapes, intrabdominal packs, delivery of head with flexion, the use of vacuum suction cup, natural birth simulation, staging and appropriate use of compression, use of tocolysis and management of impacted fetus, placenta delivery and incision repair, as well as evaluation of both surgeons expertise. Results: A contemporary approach ended in a sublime procedure. Conclusion: This approach was performed in over 800 women in eight years, including elective and emergency procedures, with best results.

INTRODUCTION

In 1882, Max Sanger (4), a 28 years-old assistant of Crede at the University Clinic at Leipzig, revolutionised the Caesarean Section (CS). He started suturing the uterus and saved women lives. Since then, the procedure remained unchanged. Modifying the procedure in several areas came out of necessity to respond to new challenges. The objective was a total revision of the CS. We wanted not only to control bleeding and infection, but also to remodel the procedure and incorporate an abandoned modus operandi and modern technology not only to improve safety and outcome but also to set new standards.

DATA SOURCES

This work was conducted at the Betsi Cadwaladr University Health Board, Glan Clwyd Hospital, Bodelwyddan, North Wales between January 2010 and May 2017 and at Pinderfields Hospital, MidYorkshire NHS Trust between November 2017 and August 2018. It included over 800 patients who underwent CS during emergency and elective procedures.

THE AIM

To highlight difficulties that now lying on the path of CS. Not to mention that a vaginal delivery is always preferable to the procedure. To design a contemporary approach with every step analysed and improved. To use lapsed techniques from the past and modifications that can lead to a safe CS, aesthetically a sublime surgical procedure that one could tell the difference by only watching it. To improve parental couples' perception and create positive women feelings.

METHODS

- Formulate an easier procedure for the assistant and theatre staff to follow. The use of retraction tapes in obese women allows to operate with a single assistant. Tapes such as Leukoplast sleek SF tapes, now replaced with traxi™ Panniculus, hypoallergenic latex free. Those latest reviewed in Contemporary OB/GYN (2). Considering a caesarean section rate up to 50 percent in the USA for women with BMI between 35 and 39.9 (1), the operating times do not differ from other caesareans, and the tapes can remain for 24 hours post the procedure.
- Eliminate bleeding (3) and create a calmer environment. Bleeding during CS can still be ferocious. Blood loss can be underestimated. Such bleeding is associated with increased morbidity. Large intrabdominal gauze packs, size 45, into either, or both paracolic gutters at the beginning of the CS apply a mild uterine compression onto large vessels and the uterus and isolate the surgical field from bowel loops and also collect amniotic fluid and blood intraoperatively. If applied dry, they soon become wet during the procedure.
- Delivery of the head with flexion so to present under the uterine incision with the occipito-bregmatic diameter. That prevents extension of the scar downwards to the cervix, the uterine vessels and the broad ligament.
- The foetal impacted head is associated with

prolonged obstructed labours, failed instrumental and more. The use of a foetal pillow was introduced in recent years (11). However, there is imited availability or application is by senior personnel only. The use tocolysis and experienced assistant to push up and flex head should facilitate delivering the head. In other cases, a reverse breech extraction with tocolysis and extension of uterine incision laterally can be used.

- Tocolysis is paramount feature of management for the foetal impacted either head or breech, very prolonged and obstructed labours. The same goes for preterm labours at fully dilatation to avoid difficult deliveries in otherwise fragile preterm babies. Tocolysis should be administered from the delivery room on the way to theatres in the form of terbutaline 250 mcg subcutaneous. Such a relaxation of the uterine muscle to facilitate delivery of the baby did not cause major bleeding and could be easily reversed with Syntocinon.
- Kiwi cup (7) should be routinely used over the flexion point (15) in order to deliver the head without fundal pressure. The empiricism was taken from trials of the instrument for vaginal delivery. The kiwi was used for repeated CS, high head, deflexed or asynclitic, malposition or when fundal pressure and assistance provided by the 2nd surgeon to deliver head was not succeeding in birth. Kiwi was readily available in every instance and did not need preparation to set up the device. It did extremely well in both emergency and elective procedures. It was properly applied over the flexion point in more than 90 percent of cases. As was indicated by the presence of chignon, there were occasional pull offs but only when applied wrongly. No cephalon hematomas or other complications were noticed.
- Placenta delivery with uterine contraction (15) showed minimal bleeding and the uterine cavity was empty from tissues or membranes. Uterine contractions gained through draining the amniotic fluid at beginning of the procedure, administration of oxytocics in the form of syntocinon at the appearance of shoulders, and further delaying delivery by attempting natural birth stimulation. Not to mention that in cases where there was a difficult head delivery or even reverse breech delivery, extensions of the uterine scar laterally should be anticipated. Therefore, inspection of integrity of lower segment is critical to apply delay in placenta delivery. A stage stitch onto the lower counterpart of the uterine incision (3) before head delivery at the midline can help to check quickly the condition, by lifting the stage stitch and inspecting the incision scar.
- Repair of the uterine incision is important to achieve haemostasis in the known appropriate ways with continuous stitching in two layers with the second layer overlapping the first one. Another way is with continuous stitching in one layer only, with the second series of stitching applied within the first layer, to ensure robust repair of the incision. Such improvising is helpful in poorly formed lower segments or very weak tissues to achieve a proper repair using the first technique. An additional complimentary stitching running along the line of the incision with several knots tied separately minimised the length of the scar and achieved a compression of the lower segment all across its length.
- Broad ligament growing hematomas should be treated intraoperatively. One or two interrupted stitches from uterine muscle across the broad ligament with care not to include adnexa tissues should be used to encircle the hematoma. More difficulties were met when repairing tears that extended downwards and teared the cervix apart.
- Uterine compression was the most effective feature to prevent or arrest bleeding (4). Mild compression is applied with abdominal packing at the beginning of the procedure. This keeps the uterus dry from amniotic fluid and blood, also with effective contractions at the time of placenta delivery. Syntocinon administration can occur at delivery of the shoulders. Such a mild compression of the uterine muscle is a wonderful preventable feature. Moderate compression can be applied with exteriorisation of the uterus and further oxytocics. Severe compression of the uterus can be applied with compressing sutures, the so known B-Lynch technique (19)(20) and the use of intrauterine balloons, the Bakri, the Rush or the all new but very effective methods to compress the cervical area and upper vagina (21).
- Uterine compression staging, whether mild, moderate and severe, guides the appropriate application in the management of postpartum hemorrhage (PPH) (14). Severe compression carries the risk of infection and uterine ischaemia and subsequent necrosis. Such a compression can be avoided if bleeding remains minimal through preventable features only.
- A dry and very well controlled procedure is always welcomed by theatre staff (15). The amniotic fluid is collected with suction along with further fluid and blood collections absorbed from intrabdominal packs. The delay in the first stage of the CS and dry and empty uterine cavity allows for stronger contractions and prevents bleeding.
- The second surgeon assisting in Caesareans (often with limited surgical experience) was an issue since the number of non-obstetric trainees increased over the last two decades. Should we guide and train before assisting in CS or simply minimise the need for assistance with better control over the procedure?
- Natural birth simulation of the baby is still preferred (15. Minimal fundal pressure should be applied (for example by using the kiwi cup over the flexion point to assist head delivery). The baby's chest compression through tight incisions and relevant delay in delivery allows the lung fluid to be seen from the baby's nostrils alongside the torso delivery. The baby often cries before delivery. In cases of foetal compromise, where resuscitation is needed, it became easier with no fluid in the baby's lungs.
- Appeal to the parental couple to observe and talk through delivery. That is possible in almost all cases as the procedure is dry, minimal bleeding and well controlled throughout. Natural birth delays the delivery further and allows parents to see baby slowly coming out and crying at same time. Sound and motion are similar with vaginal delivery. Photos can be taken to remember the moments. A delayed clamp of the cord and Baby's delivery

straight to mother improves the couple relationship and the theatre staff alike.
- To obtain best cosmetic results, usesmall length incisions and excision of old scars where indicated. Use drains where indicated. Good haemostasis is essential. Clean the scar after repairing the rectus sheath with normal saline. Close the fat tissue. Use suction dressings for high BMI. Use pressing dressings. Vaginal toilet can be done with the use of antiseptic. Prescribe prophylactic antibiotics in some cases.

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