Longitudinal Parallel Compression Suture To Control PPH Due to Placenta Previa & Accreta.

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ABSTRACT:

Objective: To determine the efficacy and safety of longitudinal parallel compression sutures to control postpartum haemorrhage (PPH) in placenta previa/accreta patients.

Methodology: This cross-sectional study was conducted at Department of obstetrics and gynaecology, Peoples University of Medical & Health Sciences for Women; Nawab shah for a period of six months from 7th June 2023 to 6th Dec 2023, after getting approval from ERB of People University of Medical & Health Science. Sample size achieved through non-probability consecutive sampling. Women fulfilling inclusion criteria were selected from the operation theatre of Obstetrics & Gynaecology, PUMHS Nawabshah. To control life threatening PPH owing to placenta previa (with or without accreta) during caesarean section, longitudinal parallel compression sutures in operating room. Outcome variables observed includes amount of blood loss, number of days stayed in the hospital, need for concurrent procedure, need of hysterectomy, and maternal death. Data was entered and analysed on SPSS 25.

Results:

The stitch was applied in 31 patients. The technique was effective, and successful as a single procedure in 11 patients (35.43%). 6 patients (19%) needed additional tamponade; 12 patients (38%) also received concurrent uterine artery ligation while 2 needed ovarian artery ligation. Despite concurrent procedure 3 patients ended up for hysterectomy (9.1%). The most common indication of caesarean section was placenta previa (51%), mostly done at a gestational age of 37 weeks ± 1.84 standard deviation. Mean age of the patient was 29 years. Estimated blood loss was more than 1.5 litre as seen in 22.6% of the patients and 71.6% patients need blood transfusion. Uterine atony was a common cause of PPH (51%). 51.6% of patients discharged within 3 days of surgery. Two patients expired.

Conclusion:

The innovative suture techniques have shown promise in improving surgical outcomes in resource-constrained environments, especially in developing countries. This effectiveness can help bridge the gap between limited resources and the need for quality surgical care.

Key words: PPH, Uterine Compression Suture, Placenta Previa, Placenta Accreta.

Introduction:

Obstetric haemorrhage is killer of about 127000 women worldwide[1] and is the foremost cause (25%) of maternal mortality[2]. Post-partum haemorrhage is preventable in 90% of the cases[3]. Placental irregularities constitute a great burden of obstetrical haemorrhage; these includes placenta previa, abruption, morbidly adherent placenta, and retained placenta. Placenta previa is found in about 5 in 1000 pregnancies after the age of viability. After 20 weeks of gestation, haemorrhage from placenta previa may be seen throughout pregnancy and puts the new born at risk of prematurity. The morbidly adherent placenta has become a serious variant of previa where hysterectomy is unavoidable in the majority of the cases[4,5]. A patient diagnosed with PPH is initially dealt with uterotonics drugs, bimanual uterine massage, and repairing the genital tract tears if any. Later if PPH is still not controlled, there is role of uterine sparing surgical methods such as compression suture, tamponade, packing, uterine artery embolization, and stepwise pelvic devascularization[6,7].

PPH an obstetrical challenge, needs enhanced awareness among health care personnel, improvement in medical management and availability of basic facilities at every health care to prevent PPH at large. Techniques that may spare uterine surgery include uterine compression sutures that includes B-Lynch either classical or modified, Hayman or Cho sutures. However, these uterine compression sutures techniques are useful only when cause of PPH is atony of the uterus, when bleeding is from the lower segment with morbidly adherent placenta, still a difficult task and pose a challenge.

Sometimes these measures are not adequate, and removal of the uterus might become the last option even in a patient who desires to maintain her fertility.

considering this, a lot of work has been done on different techniques of compression sutures.[8-11] Some techniques in the form of multiple Cho sutures or circular isthmic-cervical

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sutures put the patient in jeopardy of cervical OS occlusion and collection of blood in the uterine cavity.
Among uterine compression techniques, a parallel vertical suture may avoid this complication but some sutures may not encircle complete thickness and length of the uterine wall. Therefore, in some cases it is not possible to get complete haemostasis.
A technique used by obstetricians in China appears to be an attractive option for controlling bleeding from the atonic uterus, and placenta previa with or without adherence. This technique covers the entire thickness and length of the anterior and posterior aspect of the lower uterine segment, thus putting both walls tightly concurrently, and suggesting an instantly haemostatic effect.

Although data so far available regarding longitudinal parallel compression sutures is promising, however national literature is scanty regarding its use in our population.

Objective:

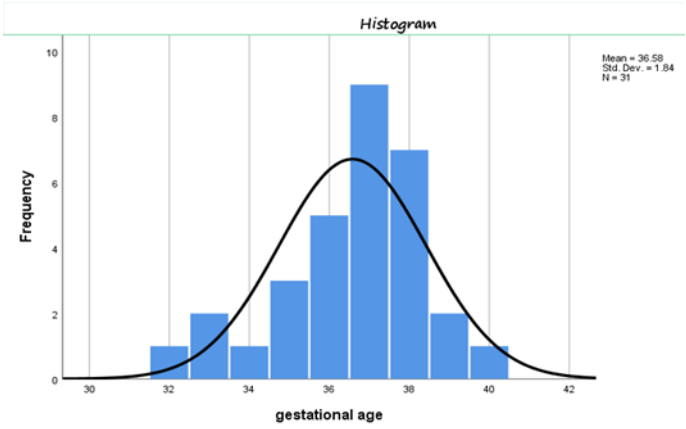
To determine the efficacy and safety of longitudinal parallel compression sutures to control postpartum haemorrhage (PPH) in placenta previa/accreta patients.

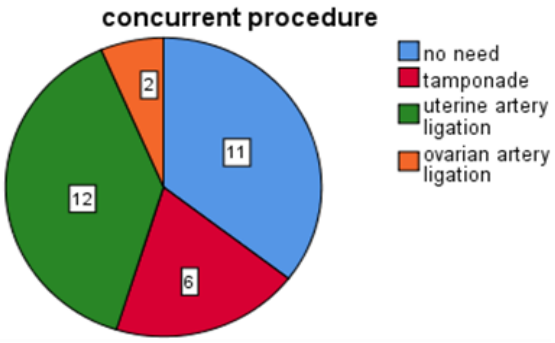
Data Collection Procedure:

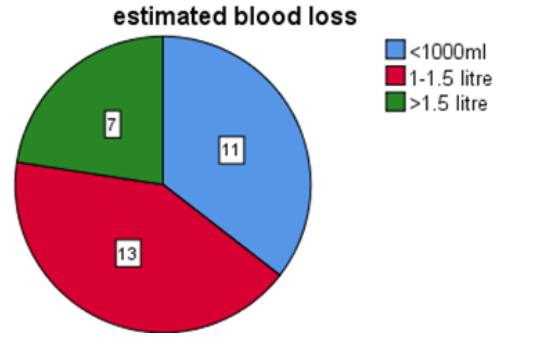
After getting approval from Ethical Review Committee, People University of Medical & Health, women fulfilling inclusion criteria were selected from the operational theatre of Obstetrics & Gynaecology, PUMHS Nawabshah. When during caesarean section, we found life-lethal PPH due to placenta previa with or without adherence, we applied longitudinal parallel compression sutures in selected women. We chose the number 1 absorbable thread with a 70 mm round needle for this technique. Point 1 from where the needle is embedded, is 1 cm from the right parallel line of the lower section of the front uterine wall and 1 cm over the upper edge of the cervix The stitch was strung through the uterine hollow to the serosa of the back wall. Then, it was coordinated vertically and strung from the back to the foremost wall at 1-2 cm over the upper limit of the lower uterine fragment and 3 cm average to the right edge of the uterus. The two ends of the stitch were tied to the front part of the uterus. The left side was stitched similarly. Outcome observed were the amount of blood loss, number of days stayed in the hospital, need for concurrent procedure, need of hysterectomy, and maternal death. All the data was collected and entered SPSS 25. Qualitative data was will be presented as frequency and percentage, while qualitative data as mean, ± SD.

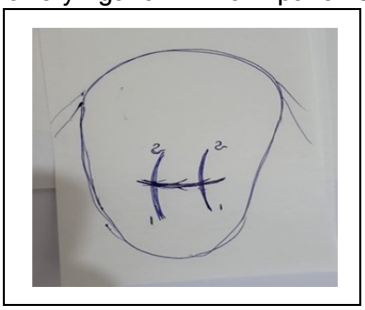
Results:

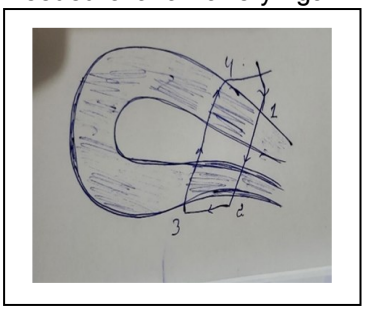
Mean age of study participants was 29 years SD±5.699. The stitch was applied in 31 patients. The technique as a single procedure was found successful and effective in 11 (36.43%) cases. 6 (19%) patients needed additional tamponade; 12 (38%) patients also received concurrent uterine artery ligation while 2 patients needed ovarian artery ligation. Despite concurrent procedure 3 (9.1%) ended up with emergency hysterectomy. The most common indication of caesarean section was major placenta previa (51%) followed by malpresentation (35.5%) mostly done at a gestational age of 37 weeks (SD±1.84). Estimated blood loss was more than 1.5 litre as seen in 22.6% of the patients and 71.6% of the patients needed blood transfusion. Uterine atony was a common cause of PPH (51%). Majority of the patients (51.6%) discharged within 3 days of surgery. Two patients expired.











Discussion:

After looking at the Global maternal mortality ratio (MMR) for the year 2020, it is very obvious that most countries are pointedly off track in terms of improvement towards achieving target, 3.1.1 of the Sustainable Development Goal 3 (SDG 3). This is about to reduce the global MMR to less than 70 per 100,000 live births by 2030. Moreover, progress in reducing maternal mortality has slowed over the past 5-10 years, and projections for the next decade until 2030 are worrisome. Conclusive activities are frantically expected to alter this direction. PPH, a major killer of women, is responsible for around 20% of all maternal

deaths globally. However, this was an overall killer in developed countries in the past. PPH almost always preventable, at present nearly eliminated as a cause of death in high-income countries; majority are usually seen in developing countries.

Newer techniques for dealing with PPH such as a variety of compression sutures can alter the outcome if the cause is atony such as B LYNCH stich[11]. However, bleeding from the placental bed on the lower uterine segment with placenta previa/ accreta could still be a life-threatening condition. Traditional methods before modern techniques include stepwise pelvic devascularization (uterine artery embolization, ovarian artery ligation, internal iliac artery ligation), and hysterectomy. Surgical skills for internal iliac artery ligation and facilities for uterine artery embolization may not be available everywhere. A hysterectomy guarantees infertility is unacceptable to most patients, hysterectomy also carries the risk of visceral injury during surgery.

Multiple types of compression sutures had been tried, fewer studies are done on parallel vertical suture and multiple square sutures on lower uterine portion combined with multiple vertical sutures or oblique penetrating uterine suture. A circular isthmic-cervical suture to control post-partum bleeding was used by Dedes & Ziogs in patient with placenta previa/accreta[19]. A modified U suture technique was used by Hackethal et al but achieved an average result[20]

Every method has pros and cons. No undeniable level of proof has determined if pressure stitches accomplish better and more secure bleeding control for PPH than different strategies, or whether one stitch procedure is supplementary, effective and more secure than another[21].

Albeit no unequivocal information is accessible, the Cho stitch seems, by all accounts, to be related to more numerous complexities than other stitching procedures. This is sensible because intricacies can be related to "pressure snugness" and "uterine entrance." As portrayed, the needle captivates the foremost and back walls 16-20 times while applying Cho stitch, which might prompt tight pressure and, what's more, reduces blood supply to uterus. The tight pressure of Cho stitch might give great haemostasis and, at the same time, thus, may likewise prompt complexities that are related to the pressure[21].

It is vital to preserve the lower uterine passage and the cervical channel open to permit blood flow drainage from the uterus while adding a pressure stitch to the lower section. In such a manner, the longitudinal vertical stitch may be a wiser decision, as it doesn't contort the state of the uterus and doesn't create a closed space inside the uterus.

Some authors utilize a cervical-isthmic occlusion stitch for treating haemorrhage and found it successful but with negative consequences. After occlusion stitches, there is a high possibility of drainage issues which may lead to a collection of blood and thus pyometra, synechia, and subfertility issues in the future[22,23]. This occlusion is not seen in longitudinal parallel sutures technique.

Muhammad[24] found a vertical compression suture successful in dealing with PPH, but the author also used an intrauterine Foley catheter in all patients in addition to compression suture. While our study shows the technique was successful in 35.53% of the patients on its own. A study by G. Sel in 2021 in Nigeria announced a newer technique to compress the uterus and found it successful in 97% of the cases but this was done in only patients with uterine atony[25], rather than in patient with placenta accreta. We used haemostatic longitudinal compressing stitch to control the PPH not responding to conservative measures on atonic uterus especially with diagnosis of placenta previa. The central idea behind this strategy is technical pressure on the uterine vascular channels and endometrial lacerations after which blood accumulation in uterine vessels is prevented and thus the bleeding risk decreases. These types of stitches close the placental bed with twisting vessels and its branches. (e.g., arcuate, radial, basal, and spiral branches, and their interconnection) to diminish the bloodstream to the lower uterine fragment from its parallel edges more, impede the placental bed vessels by firmly opposing the front and back uterine walls. As such, longitudinal parallel stitch might have double capacity of haemostatic pressure of the bleeding surface and decreased uterine bloodstream. Publish studies[14] used parallel vertical sutures whose benefit might be to the avoidance of visceral injury but may face difficulty while taking stitches in the posterior uterine wall, as in that method needle must be directed upward 3-4 cm within the middle part of the posterior segment. This is much more difficult in patients with heavy bleeding where the field is obscured and tissue are quite thin and friable. Thus, a full-thickness stitch bite seems to be logical, simple, and effective in avoiding injury to nearby organs.

Technique found successfully to control bleeding in 35% of the study population as a single procedure and along with concurrent procedures in the rest of the patients. However, this rate is lower than few studies conducted by Hwu[14], & Dede & Ziogas.[19] While Matsuzaki et al.[26] examined the utilization of a UCS-committed needle for Angular uterine stitch and its possible application in placenta previa cases. Nagahama et al[27]. portrayed the clinical involvement in the B-Lynch procedure, which includes the use of a pressure stitch, and showed success in 95.2% in controlling PPH. Sarker et al[28]. led a concentrate on lower uterine pressure stitches for overseeing PPH because of placenta previa during the caesarean segment and found that the procedure successfully controlled draining in 88.9% of cases. Li et al[28] reflectively dissected the utilization of removable retropubic uterine pressure stitches (RRUCS) and revealed a 92.31% achievement rate in halting PPH because of uterine atony.

During the current study, 3 patients required a hysterectomy despite undergoing a compression suture. We lost 2 patients during the study; this is not a justification but a fact that both patients arrived in critical condition, one gasping for breath and the other in septic shock.

Most patients were discharged in 3 days post-surgery apparently with smooth recovery. However, these patients were not followed to assess the long term problems if any; and therefore multicentre studies with long follow-up are needed to further build and strengthen confidence upon the technique.

Conclusion:

In the regions where access to state-of-the-art medical facilities is a luxury, the adoption of this technique could prove transformative. Its simplicity, cost-effectiveness, and the potential for skill transferability make it a beacon of hope for healthcare providers and patients alike.

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