International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Vijay A et al. Int J Reprod Contracept Obstet Gynecol. 2023 Dec;12(12):3614-3618
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20233644

Original Research Article

Post operative wound gape in obstetric and gynaecological surgeries

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Received: 24 October 2023
Revised: 17 November 2023
Accepted: 18 November 2023

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ABSTRACT

Background: Despite advances made in asepsis, post operative wound infection is one of the major causes for increased postoperative morbidity and huge economic burden for patient and healthcare. This study was undertaken to identify risk factors for the post operative wound gaping in obstetrical and gynaecological surgeries.
Methods: Retrospective observational study was conducted in the department of obstetrics and gynaecology of Pt. Madan Mohan Malviya Shatabdi hospital, Govandi, Mumbai for the year 2022.
Results: 1611 cases were analysed that underwent various obstetrical and gynaecological surgeries. Post operative wound gaping incidence was 1.5 %. Most of the cases were seen in less than 34 years of age. 21% of cases reported with wound gaping and discharge within 5-7 days of surgery while 79% of cases reported gape after 7 days of surgery. 54% cases with wound gape were obstetric. The most commonly known associated risk factor was found to be diabetes mellitus (12.5%) followed by anaemia (8.3%), obesity (4.2%) and hypertension (4.2%). 62.49% of post operative surgical wound gape were multiparous. It is seen that in all these cases of wound gape the subcutaneous tissue was sutured separately as a layer with absorbable suture material- Vicryl no 1-0 or Vicryl no 2-0.
Conclusions: Factors affecting post operative wound gaping are diabetes mellitus, anaemia, hypertension, obesity, chemoprophylaxis given prior to surgery, surgical method of wound closure and type of surgery. Standard wound closure techniques, correction of the avoidable known risk factors would provide a better outcome.

Keywords: Wound gape, Obstetrics and gynaecology, Post operative wound infection

INTRODUCTION

Today in laparoscopic era, there is no denying regarding the need of open abdominal surgeries for various abdominal and pelvic pathologies. Despite various advances made in asepsis, operative procedures, sterilization and anti-microbial drugs, post-operative wound gape continues to be a major threat. Post operative wound infection is one of the major causes for increased postoperative morbidity and huge economic burden in the form of prolonged hospital stay, readmission and procedures. While the global estimate of Surgical site infection (SSI) has varied from 0.5-15%, studies in India have consistently shown higher rates ranging from 20-38%.[1-3] The variability in estimate is consistent with the difference in the characteristics of the hospital populations, the underlying diseases, difference in clinical procedures, the extent of infection control measures and in addition the hospital environment. Factors which increase an individual's risk to post operative wound gaping include age, obesity, nutritional status, preoperative medical disorders like anaemia, diabetes, jaundice, use of steroids, poor intra operative preparation, emergency or elective surgeries, duration and type of surgeries, post operative

wound site contamination, increase in intra-abdominal pressure, wound infections etc. [4] Hence this observational study has been undertaken to estimate the incidence of SSI, the factors associated with the occurrence of SSI and their antibiotic sensitivities in post operative wards.

METHODS

Study design, location and duration

Current study is a Retrospective observational record-based study conducted at department of obstetrics and gynaecology of Pt. Madan Mohan Malviya Shatabdi hospital, Govandi, Mumbai from 01 January 2022 to 31 December 2022.

Inclusion criteria

All patients aged 18-80 years who underwent obstetric or gynaecological surgeries either elective or emergency were included.

Procedure

The data of obstetric and gynaecological surgeries conducted in Pt. Madan Mohan Malviya Shatabdi hospital from January to December 2022 was retrieved from Medical Records Department and recorded including method of wound closure, wound status on 5th day of surgery, post operative day of presentation of wound gape or discharge and the follow up regarding the same. Patient's progress, associated known risk factors and response to drug treatment was recorded. Secondary suturing if done was noted. The data was entered in Microsoft Excel 2021 and analysed.

RESULTS

The statistical data was compiled, analysed and a master-chart was created in Microsoft Excel 2021.

Table 1: Distribution of wound gape in different age groups.

Age (years)	N	%
18-24	8	33
25-34	7	29
35-44	4	17
45-54	5	21

Table 2: Distribution of wound gape in obstetric and gynaecological surgeries.

Number of wound gape	Total number of obstetric and gynaecological surgeries	%
24	1611	1.5

The study included 1611 patients that underwent obstetric and gynaecological surgeries. Post op wound gape was found in 24 patients. 20 of these cases underwent secondary suturing. The surgeries that were performed included caesarean sections and trans-abdominal hysterectomy. A total of 875 cases were obstetric and 736 were of gynaecology. The (Table 1) shows distribution of wound gape in different age groups. Major proportion of cases were found to be in subjects less than 34 years of age. The (Table 2) shows distribution of wound gapes cases amongst all obstetric and gynaecological surgeries. The (Table 3) shows day of post op wound dehiscence. 79% of cases reported gape after 7 days of surgery.

Table 3: Day of Post-op wound dehiscence noted.

POD (days)	N	%
<5	0	0
5-7	5	21
>7	19	79

Table 4: Distribution of types of surgery.

Type of cases	N	%
Obstetric	13	54
Gynaec	11	46

Table 5: Cases resulting in secondary suturing.

Secondary suturing	N	%
Yes	20	83
No	4	17

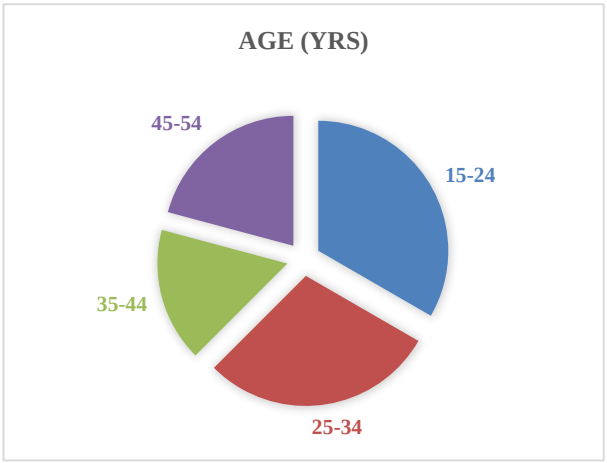

Figure 1: Distribution of study subjects according to age.

This was similar to results of a study done by Matin et al showing appearance of wound between 6 to 10 days post operatively in more than half of the population. The (Figure 1) shows distribution of study subjects according to age, (Figure 2) shows day of post op wound dehiscence noted. The (Table 4) shows distribution of type of surgery. 54% of total cases were obstetric and 46% of cases are gynaecological. The (Table 5) shows cases resulting in secondary suturing 80% of cases underwent secondary suturing. The (Table 6) shows data on status of surgery

undertaken. 75% cases were emergency, all of which were obstetric cases. The (Table 7) shows the associated risk factors. Most common risk factor associated was Diabetes mellitus (12.5%) followed by anaemia (8.3%) and obesity (4.2%). The (Table 8) shows risk factors. Multiparity was a common risk factor (62.49%).

Table 6: Data on status of surgery undertaken.

Type of surgery	N	%
Elective	18	75
Emergency	6	25

Table 7: Various risk factors associated with wound gape.

Risk Factors	N	%
DM	3	12.5
Obesity	1	4.2
Anemia	2	8.3
HTN	1	4.2

Table 8: Parity status of subjects with wound gape.

Parity	N	%
0	01	4.17
1	08	33.33
2	08	33.33
3	07	29.16

Table 9: Type of suturing done.

Skin suture	N	%
Vertical mattress	20	83.33
Subcuticular	03	12.50
Staples	01	04.17

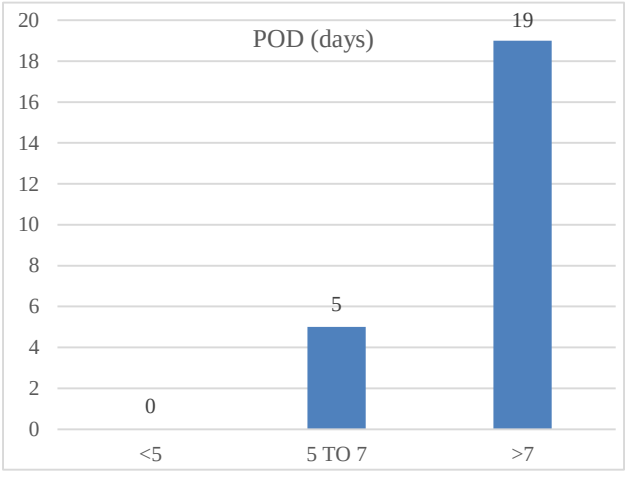

Figure 2: Day of post-op wound dehiscence noted.

The surgical chemoprophylaxis given included Piperacillin-Tazobactam, Metronidazole, Cefixime, Ceftriaxone and Amoxicillin-Clavulanic acid. No growth was found after culture results in two of the cases with post operative wound gape and growth was documented in only one of the cases. The (Table 9) shows type of suturing done. Major proportion of cases were seen following skin closure by vertical mattress sutures. The most common suture material used was Ethilon no.1 and Vicryl No. 1-0.

DISCUSSION

Wound healing is a series of events influenced by deficiencies, comorbidities of the patient along with external environmental conditions of the wound. Despite the advances made in asepsis, antimicrobial drugs, sterilization and operative techniques, surgical site infections continue to be a major problem in all surgical departments of a hospital. In our study 1611 cases were analysed that underwent various obstetrical and gynaecological surgeries. Post operative wound gaping was found to be seen in 24 out of 1611 cases and thus having an incidence of 1.5 %. This rate was lesser as compared to the study done by Narang et al in 2017.[4]

Most of the cases were seen in less than 34 years of age as maximum caesarean sections were seen in this group. Similar results were seen in a study done in Bhopal by Narang et al in 2017.21% of cases reported with wound gaping and discharge within 5-7 days of surgery while 79% of cases reported gape after 7 days of surgery. This was similar to results of a study done by Matin et al showing appearance of wound between 6 to 10 days post operatively in more than half of the population.[5] 54% cases with wound gape were obstetric and all of them were undertaken on an emergency basis. This result was similar to study done by Malhotra et al and Rahman et al 83% cases had undergone secondary suturing.[6,7] Hyperglycaemia is an important factor affecting wound and tissue healing and from surgical recovery. Significant increase in cases of wound gaping has been noted in uncontrolled blood sugar levels.[8] In our study, the most commonly known associated risk factor with wound gaping was found to be diabetes mellitus (12.5%) followed by anaemia (8.3%), obesity (4.2%) and hypertension (4.2%). Multiparity was also found to be a risk factor and in our study 62.49% of post operative surgical wound gape were multiparous. This result is in close similarity to 65% in a study done by Narang et al.[4]

The surgical chemoprophylaxis given included Piperacillin-Tazobactam, Metronidazole, Cefixime, Ceftriaxone and Amoxicillin-Clavulanic acid in our study setting. Various studies regarding antibiotic prophylaxis have been done. Houang et al used ampicillin combined with sulbactam or metronidazole for single dose chemoprophylaxis in major gynaecological surgery.[9] Growth was documented in only one of the cases. All wound dehiscence must be investigated for culture and sensitivity testing with the reports traced and documented meticulously in view of antimicrobial stewardship which was lacking here. Standard techniques of wound closure play a vital role in maintaining wound integrity and various studies have been done regarding suturing methods and

suture material. Major proportion of cases were seen following skin closure by vertical mattress sutures. It is seen that in all these cases of wound gape, the subcutaneous tissue was sutured separately as a layer with absorbable suture material- Vicryl no 1-0 or Vicryl no 2-0. However, a study done by Kore S et al did comparison of closure of subcutaneous tissue versus non closure in relation to abdominal hysterectomy patients showed that closure of subcutaneous tissue after abdominal hysterectomy of women with at least 2.5 cms of subcutaneous tissue lowers the complication rates of wound disruption.[10] The use of closed suction drainage in the subcutaneous space may reduce the incidence of postoperative wound complications in obese women who have at least 2 cm of subcutaneous fat and undergo caesarean delivery as per study done by Allaire et al.[11] Studies show the additional use of a subcutaneous drain along with a standard subcutaneous suture reapproximation technique is not effective for the prevention of wound complications in obese women undergoing caesarean delivery.[12] Suture closure of subcutaneous fat during caesarean delivery results in a 34% decrease in risk of wound disruption in women with fat thickness greater than 2 cm.[13] Differences in the methods of skin closure have the potential to affect patient outcomes and use of healthcare resources. Further well-designed trials at low risk of bias are necessary to determine which type of suturing is better.[14] Continuous closure gives good results in elective setting.[15]

A drain is necessary-exit it close to incision. Use subcuticular absorbable sutures. If there is excessive tension on the wound edges, place tension relieving figure of eight or X suture in the subcutaneous tissue using monofilament slowly absorbable suture which retain tensile strength for 3 to 6 weeks or longer.[16] The rationale for our current day use of absorbable and nonabsorbable suture materials is based upon the biology of wound healing and the physiologic response of tissue to implanted sutures.[17] Surgical wound closure with subcuticular suture with absorbable suture material gives excellent cosmetic results, cheaper and cost-effective compare to other technique of wound closure having similar cosmetic result. As the removal of suture is not required, no follow up visit needed, and it saves the extra time and expenditure of patient.[18]

CONCLUSION

After the above discussion we hereby conclude the following: risk factors like co-morbidities should be well controlled (or managed well in post operative period) for effective wound healing post operatively. Selection of suture material which has least tissue reaction is essential. Suturing technique plays an important role. However, there is no definite consensus as to whether the subcutaneous tissue be sutured as a separate layer or not. A separate further study to point out the effectiveness or ineffectiveness of suturing the subcutaneous layer or if it is detrimental needs to be done.

ACKNOWLEDGMENTS

Authors would like to acknowledge the support given by all staff of Medical Record Department of Pt. Madan Mohan Malviya Shatabdi hospital, Govandi in retrieving the one-year data of the study sample.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Vijay A, Chilkund J, Kore S, Kumari S. Post operative wound gape in obstetric and gynaecological surgeries. Int J Reprod Contracept Obstet Gynecol 2023;12:3614-8.