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Original Research Article

## A study to assess factors contributing for the occurrence of incisional hernia among patients operated with pfannenstiel incision and management with mesh repair

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### ABSTRACT

**Background:** Incisional hernia is due to failure of lines of closure of abdominal wall following laparotomy. Bowel or a part of bowel or omentum can bulge through the gap. The early occurrence (within 5 years) is mainly due to early sepsis and obesity. Objective of present study was to assess the factors contributing for the occurrence of incisional hernia.

**Methods:** All the women who were operated between March 2014-December 2016 using a low transverse Pfannenstiel incision and who did not have any other lower (vertical) incisions and laparoscopic surgeries were followed up in the outpatient department. 1,252 cases were followed up during the above-mentioned period and the detail history was elicited and meticulous physical examination was conducted. USG Abdomen was done in all the cases. Out of 1,252 cases 25 were having incisional hernia and mesh repair was done for incisional hernia.

**Results:** Nearly 2% of these cases had incisional hernia. Obesity was the main risk factor in 36% of the study participants followed by wound infection in 32%.

**Conclusions:** Obesity, redo surgeries, size of the incision and type of suture materials used contribute to the formation of incisional hernia. Although the incidence is low still incisional hernia can occur following Pfannenstiel low transverse abdominal incision.

**Keywords:** Incisional hernia, Low transverse abdominal pfannenstiel incision, Obesity

### INTRODUCTION

The incisional hernia can be defined as any abdominal wall gap with/without a bulge which can be made out by clinical examination or by imaging techniques.<sup>1</sup>

Only bulge cannot be taken into consideration while defining the hernia and hence greater emphasis was given on physical examination to make out any defect. Roland W. Luijendijk also explained about this in his published article in *annals of surgery*/1997.<sup>2</sup> Incisional hernia is due to failure of lines of closure of abdominal wall following

laparotomy. Bowel or a part of bowel or omentum can bulge through the gap. The early occurrence (within 5 years) is mainly due to early sepsis and obesity.

Other factors that can contribute to the formation of incisional hernia are redo surgeries, size of incision, type of suture material used (absorbable/non-absorbable), diabetes mellitus and anemia. The incidence of incisional hernia after midline laparotomy varies from 3% to 46% were as a low prevalence of incisional hernia ranges from 0.0% to 0.5% following Pfannenstiel incision in various studies.<sup>3-6</sup>

In 1900, Heman Johannes Pfannenstiel described a low transverse abdominal incision to prevent incisional hernia development.<sup>7</sup> The incision bears his name and this incision is used for various Gynecological and Obstetrics procedures. This is also called as bikini line incision which is aesthetically more pleasing.<sup>8</sup>

The only disadvantage with this incision is nerve entrapment. Wherever feasible, the Pfannenstiel incision should be adapted. It is reported that after the first incisional hernia repair, recurrence rate is as high as 53%. Various factors are attributed to the Pfannenstiel incision or its modifications which are far better with respect to the occurrence of incisional hernia. This incision is sounder anatomically and physiologically compared to vertical incisions. The transverse incisions are used in the Langer lines of cleavage, contraction of the abdominal muscles (coughing, sneezing, and vomiting) does not increase tension on the operated site and this incision is placed in highly vascularized muscle tissues which helps in faster wound healing.<sup>9</sup>

The incisional hernia in patients with risk factors suggests a multifactorial biological basis. The only disadvantage of Pfannenstiel incision is that it can lead to chronic post-operative pain which may be due to nerve related disorders.<sup>10</sup> So the present study was conducted with the objectives; to assess the factors contributing for the occurrence of incisional hernia in patients who had undergone surgical procedures by low transverse Pfannenstiel Incision for Obstetrics and Gynecological conditions and to find out the outcome of incisional hernia with Mesh repair.

**METHODS**

It is hospital based prospective interventional study carried out at Malla Reddy Institute of Medical Sciences, a tertiary care teaching hospital in the Department of Obstetrics and Gynaecology. The study was done for a period of 33 months from March 2014 to December 2016. All the women who were operated using a low transverse Pfannenstiel incision for Obstetrics and Gynecological conditions were included in the present study. During the study period a total of 1,252 women were studied. Out of 1,252 near about 25 women were having incisional hernia.

**Inclusion criteria**

- All the women who were operated using a low transverse Pfannenstiel incision for Obstetrics and Gynecological conditions.

**Exclusion criteria**

- Patients who had underwent other lower abdominal incisions either vertical/oblique and any other previous laparoscopic surgeries.

The study participants were explained the purpose of the study. All the women who were operated between March 2014-December 2016 using a low transverse Pfannenstiel incision and who did not have any other lower (vertical) incisions and laparoscopic surgeries were followed up in the outpatient department of Obstetrics and Gynecology and referred to surgery department for further evaluation.

A total of 1,252 cases were followed up with detail history and were meticulous examined physically to find the gap in the abdominal wall and for any bulge. USG Abdomen was done in all the cases. After discharge, the study participants were followed up for a period of 2 years. At every 6 months, they were asked to report to the hospital for routine check-up. Among all the patients who were detected as incisional hernia mesh repair was done using Polypropylene mesh and after surgery they were followed up every 3months over a period of 1 year. A informed as well as written consent was taken from all the study participants and they informed about the importance of follow up.

**RESULTS**

The overall incidence of incisional hernia in present study was found to be 2%. All the study participants with incisional hernia were treated with Mesh repair. The mesh used was Polypropylene mesh and outcome with the repair was good in all the study participants.

**Table 1: Distribution of study participants with presenting symptoms.**

Symptoms	Frequency	Percent
Asymptomatic	02	8
Pain	05	20
Swelling	18	72
Total	25	100

Table 1 shows that out of 25 study participants who were having incisional hernia, 8% were asymptomatic that is incisional hernia was found after physical examination. Near about 20% of them had pain as presenting symptom and 72 %had swelling.

**Table 2: Distribution of the study participants with number of surgeries.**

No. of surgeries	Frequency	Percent
Once	03	12
Twice	05	20
Two or more than two times	17	68
Total	25	100

Table 2 shows that 68% of the study participants had undergone two or more than two times surgeries in the past. Almost 20 % of them had twice surgeries and 12 % had undergone once surgery in the past.

**Table 3: Distribution of study participants with the type of suture material used.**

Type of suture material	Frequency	Percent
Absorbable	20	80
Non-Absorbable	05	20
Total	25	100

Table 3 shows that in 80 of the study participants absorbable suture material is used while in 20 % of them non-absorbable suture material used.

**Table 4: Distribution of the study participants with presence of risk factors.**

Risk factors	No. of cases (n)	Percent
Nil	05	20
Obesity	09	36
Wound Infection	08	32
Diabetes	02	8
Chronic obstructive airway disease	01	4
Total	25	100

Table 4 shows that obesity was the main risk factor in 36% of the study participants followed by wound infection in 32%, diabetes in 8% and chronic obstructive airway disease in 4% respectively. Near about 20% of the cases were not having any risk factors but still they developed incisional hernia.

**Table 5: Distribution of the study participants with length of the incision (Cms).**

Length of the incision (Cms)	Frequency	Percent
>8	21	84
<8	04	16

Table 5 revealed that in 84% of study participants the length of the incision was >8cms were as <8cms incision was given in 16% of the study participants.

## DISCUSSION

The overall incidence of incisional hernia in present study was 2%. Other study done by Latief A et al, the incidence of incidence was found to be 1.76% which is near about similar to present study.<sup>11</sup> The prevalence of incisional hernia in another study was less compared to the present study which is 1%.<sup>12</sup> The prevalence of incisional hernia in another study was high 3.5% compared to present study.<sup>13</sup> In another study it was found that incisional hernia with pfannestiel incision was 14.9% which is very high than present study.<sup>14</sup>

The interventions done in all the incisional hernia cases was with Polypropylene mesh repair and yielded good results. The present study findings were consistent with

other studies too were they have used Polypropylene mesh for repair and they too got results.<sup>15-18</sup>

The present study shows that out of 25 study participants who were having incisional hernia, 8% were asymptomatic that is incisional hernia was found after physical examination. Near about 20% of them had pain as presenting symptom and 72% had swelling. The present study findings were not similar with other study were pain was the main presenting symptom (74%) followed by swelling in 26.47%.<sup>11</sup>

It was observed that in the present study 68% of the study participants had undergone two or more than two times surgeries in the past which are near about similar with other study were 76.48% have undergone more than two times surgeries.<sup>11</sup> Almost 20% of them had twice surgeries and 12% had undergone once surgery in the past which is consistent with other study were 23.52% had once or twice respectively.<sup>11</sup>

In the present study obesity was the main risk factor in 36% of the study participants followed by wound infection in 32%, diabetes in 8% and chronic obstructive airway disease in 4% respectively. In another study wound infection was the main risk factor (20.58%), Obesity was seen in 18%, Diabetes was seen in 12%.<sup>11</sup>

In the present study 20% were not having risk factors still they developed incisional hernia were as in another study 32.35% were not having any risk factors.<sup>11</sup> In a study done by Priti Prasad Shah et al diabetes was one of the risk factor in 41.17% of study participants which is more than present study and obesity was found in 19% of them.<sup>14</sup>

## CONCLUSION

Wherever feasible we recommend the use of Pfannenstiel incision or its modification in lower abdominal surgeries. Incisional hernia is a rare complication and this incision can lead to excellent cosmetic result. Physical examinations must be done in all cases to make diagnosis of incisional hernia. Complications of nerve damage are not uncommon.

Whenever feasible nerve should be identified and preserved. The use of non-absorbable sutures is strongly recommended. It is always preferable to treat pre-existing diseases like anemia, chronic airway disease, diabetes mellitus before surgery. Prophylactic antibiotics might reduce the occurrence of wound infections and incisional hernias. Repair of incisional hernia with Polypropylene shows good outcome.

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