

## Outcomes of Onlay Open Mesh Repair for Incisional Hernia Among the Co-Morbid Patients in BIRDEM Hospital

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Open mesh hernioplasty (onlay) of incisional hernia is safe and effective technique, but is associated with a set of postoperative complications including persistent postoperative pain, patient discomfort, infection, tissue failure and early recurrence. We still have quite insufficient data in this regards in our surgical practice. The ultimate aim of this study is to find out those in our surgical setup among the co-morbid patients of ASA II to IV. This prospective study was conducted among the patients of incisional hernia admitted in Department of Surgery, BIRDEM General Hospital, Dhaka, Bangladesh from January 30, 2013 to November 30, 2016. A total 56 patients were selected on the basis of convenient sampling. The results of this study suggests that postoperative pain fell gradually following surgery and declined to 1.3 (pain score) on 30th postoperative day and patient's compliance increased gradually following surgery and was maximum (9.8) at the end of 2 years (using VAS). Surgical site infection was the most common postoperative complications, found approximately in 5.4% cases, followed by haemorrhage (3.5%) and persistent postoperative pain (3.5%). The incidence of procedure related mortality and early recurrence (up to 2 years) were found nil in this study. The average length of hospital staying was 3 and 9 days respectively in uncomplicated and complicated cases. Open onlay mesh repair is an effective surgical technique among the co-morbid patients with favorable surgical outcomes. It can be adopted as a safe procedure for incisional hernia repair in tertiary hospitals of Bangladesh.

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**Key words:** Onlay mesh repair, Mesh hernioplasty, Incisional hernia, Complications, Outcomes

### Introduction

Incisional hernias are ventral hernias through a surgical scar. Serious complications of abdominal surgery and incisional hernias occur in 11–23% of laparotomies.<sup>1</sup> Incisional hernias enlarge over time and can give rise to complications, including pain, discomfort, bowel obstruction, incarceration, and strangulation. Incisional hernias also may adversely affect an individual's quality of life. The recurrence rate after open suture repair may be as high as 24-54%,<sup>2</sup> and for open mesh repair, up to 34%.<sup>3-4</sup> Several methods of securing the mesh to the fascia have been described and the most common are mesh onlay, inlay, retrorectus underlay, preperitoneal underlay, and

intraperitoneal underlay.<sup>5</sup> The onlay technique consists of relaxing incisions in the anterior rectus sheath with primary approximation of the linea alba and medial turnover of the anterior rectus sheath followed by mesh placement. The extraperitoneal onlay mesh repair is associated with a lower recurrence rate (10%).<sup>6</sup> The disadvantages are that it requires wide undermining of tissue, which may predispose the patient to wound-related complications, and that less pressure is required for disrupting the mesh from the anterior abdominal wall than that of other repair procedures. The inlay technique involves excision of the hernia sac and identification of healthy fascial margins.

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This technique provides a tensionless repair at the time of surgery. Without the overlying support of the anterior abdominal wall, activities that increase intra-abdominal pressure impart significant tension on the mesh-fascial interface, which is the weakest point of the repair. The re-herniation rate of the inlay technique is significantly higher than that associated with the underlay technique and also tends to be higher than the onlay technique.<sup>7-8</sup> In the retrorectal underlay technique, the mesh is placed between the posterior rectus sheath and transverse fascia, beneath the rectus muscle. In the preperitoneal underlay method, the mesh is placed between the transverse fascia and the peritoneum. Recurrence rates of less than 10% have been reported with these techniques.<sup>9-10</sup> The intraperitoneal underlay placement is a common technique used in open and laparoscopic approaches. Proponents of this technique state that the ability to place the mesh with a large underlay allows for better tissue ingrowth and that this technique allows greater variability in fixation, from approximation at the fascial margins to full-thickness lateral fixation.<sup>11</sup> The recurrence rates of the intraperitoneal underlay technique are reported to be less than 5%.<sup>12</sup>

Mesh repair of incisional hernia is associated with a number of potential early postoperative complications specially in onlay technique, including significant pain, patient discomfort, infection, early recurrence (within 2 years) due to tissue failure etc.<sup>13</sup> In this research

study our main goal is to find out those in our surgical setup among the co-morbid patients (ASA II-IV)<sup>14</sup> as we still don't have any sufficient authentic data in such relation in our clinical practice.

### Methods

This prospective study was carried out in Department of Surgery, BIRDEM General Hospital, Dhaka, Bangladesh from January 30, 2013 to November 30, 2016 based on non-randomized convenient sampling. Data was collected on a proforma designed to include demographic information, history, examination findings, investigations, operation technique etc. Respective patients of 20 years or above who underwent open mesh repair (onlay) for incisional hernia were included in this study based on inclusion & exclusion criteria. ASA Grade II to IV,<sup>14</sup> patients with no congenital disorder or anomaly, BMI < 35 kg/m<sup>2</sup> etc. were major inclusion criteria here whereas, patients who didn't attained in follow up, refusal of the patient at any stage, critical-ill patients with septicaemia were major exclusion criteria. Factors like BMI, existing risk factors of complications, selection bias, different OT setup etc. were acted as important confounding variables in this study. Preoperative prophylactic antibiotics were given to all patients. In majority of the patients, follow up was done for the first 48 hours (or up to discharge from hospital), then on 10<sup>th</sup> and on 30<sup>th</sup> day following surgery and finally on 3 months interval up to 2 years.

## Results

A total 56 patients of incisional hernia were included in this study over the study period. The age and sex distribution is depicted in table I.

Table I: Age and sex distribution of study population

Age in years	Male		Female	
	n	%	n	%
20-30	00	00	00	00
31-40	03	5.4	05	8.9
41-50	11	19.6	17	30.4
51-60	07	12.5	09	16.1
>60	02	3.6	02	3.6
Total	23	41.1	33	58.9
Mean±SD		40±1.3		46±1.5

Figure 1 represents the demographic profile including average BMI, ASA grading & average operative duration in study population.

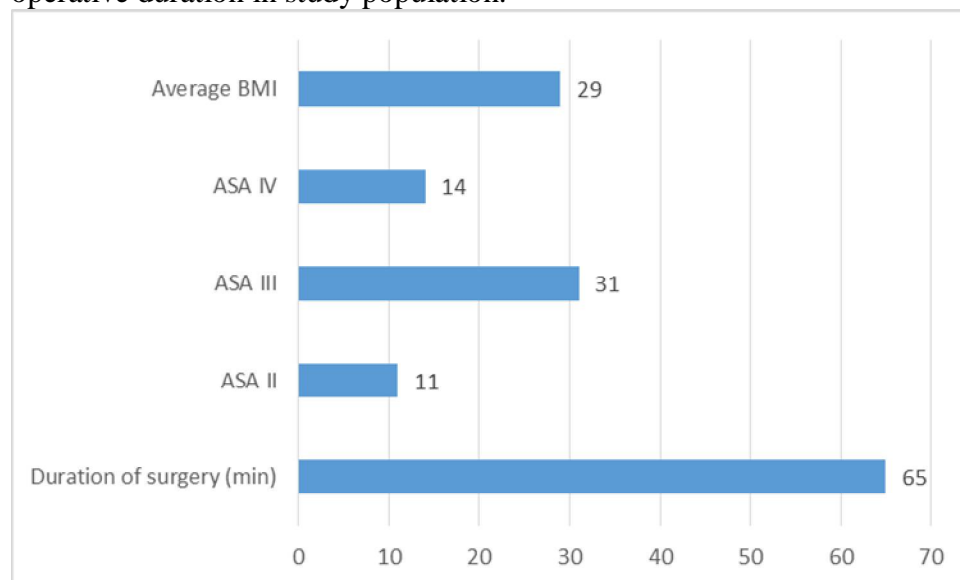


Figure 1. Average BMI, ASA grade & average operating time in study population

The findings of this prospective study suggest that postoperative pain on an average fell gradually (figure 2) in the postoperative period and was approximately 00 at 2 years (using pain scale<sup>14</sup>: 00 to 10, where 00 reflects no pain and 10 signify severe intractable pain). The patient's compliance was recorded by using the Visual Analogue Scale (VAS<sup>14</sup>: 00 to 10) where 10 signify 100% compliance and 00 indicates no compliance at all).

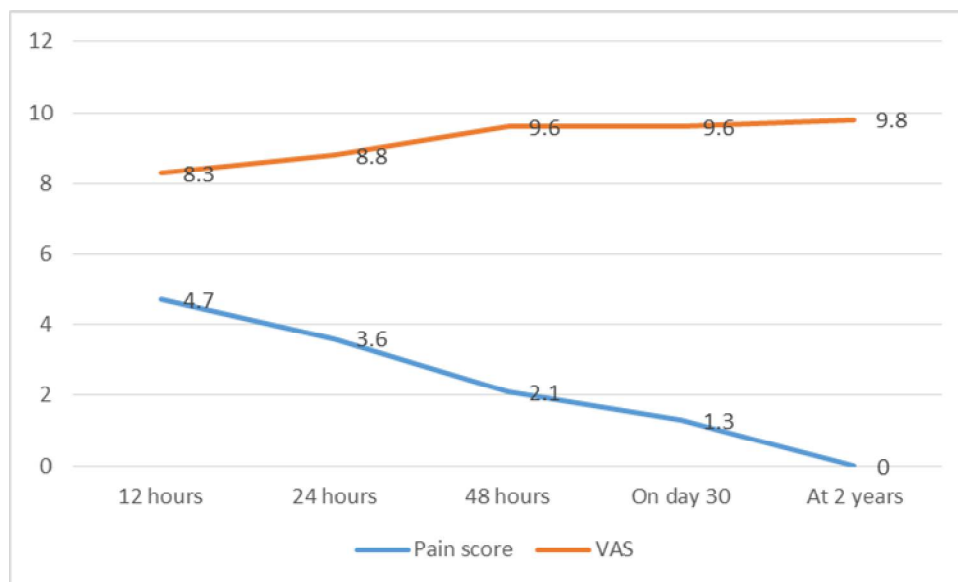


Figure 2. Average pain and patient's compliance on follow up

Different postoperative complications are depicted in table II.

Table II: Postoperative Complications.

Postoperative complications	n	%
Haemorrhage	02	3.5
Persistent pain (up to 30)	02	3.5
Surgical site infection	03	5.4
Operative mortality	00	00
Early recurrence (up to 2 years)	00	00

The average length of hospital staying is represented in figure 3.

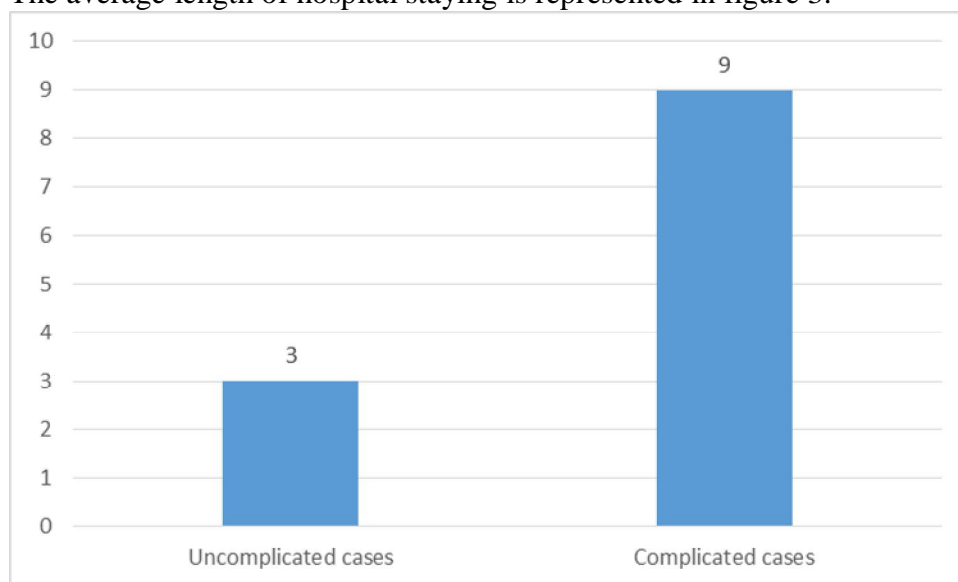


Figure 3. Average length of hospital staying (in days)

## Discussion

This prospective study was conducted with a total 56 study population among which majority were female (58.9%). Among the male population 19.6% were in 41 to 50 years age group, whereas among female it was 30.4%. Mean±SD of age were 40±1.3 years and 46±1.5 years respectively (Table I). In another clinical study, majority were male 61% and most of them were in 40 to 60 years of age group.<sup>15</sup>

Demographic characteristics of our study suggests that mean BMI of the study population was 29. 14 patients (25%) had ASA grade II, 31 patients (55.4%) had ASA grade III and 11 patients (19.6%) had ASA grade IV regarding the question co-morbidities. The duration of surgery was 65 min on an average (Figure 1). Regarding the postoperative pain and patient's compliance, figure 2 suggests that postoperative pain fell gradually following surgery and declined to 1.3 on 30<sup>th</sup> postoperative day (using the pain score). At the end of 2 years, it was found to be nil. On contrary, patient's compliance increased gradually following surgery and was maximum (9.8) at the end of 2 years (using VAS). In a RCT, it was found that postoperative pain was maximum after 6 hours of surgery (pain score 3.9) and was minimum from postoperative day 3 (pain score 1.5).<sup>16</sup>

In this study, we have found that surgical site infection was the most frequently observed complications occurred approximately in 5.4% cases, followed by haemorrhage (3.5%) and persistent postoperative pain (3.5%). The incidence of procedure related mortality and early recurrence (up to 2 years) were found nil in this study. In another research study, haemorrhage was associated in almost 6.8% cases followed by wound infection in approximately 3.5% cases. In that particular

study mortality rate was recorded to be 1.1% and early recurrence (within 1 year) rate was 2.2%.<sup>17</sup> The results of a RCT in such relation suggests that surgical site infection, mortality and early recurrence (within 2 years) were 7.7%, 1.6% and 1.6% respectively.<sup>18</sup> The average length of hospital staying was 3 and 9 days respectively in uncomplicated and complicated cases (Figure 3). In different clinical studies, it was in between 2 to 10 days<sup>19</sup>. Delay in discharge were usually associate with wound infection and other post-surgical complication or due to co-morbidity related problem.<sup>20</sup>

## Conclusion

The results of this study is highly suggestive of that open onlay mesh repair is effective procedure with relatively less post-surgical complications and favorable results in our common surgical practice. It is a suitable technique for incisional hernia repair in tertiary hospitals of Bangladesh like the BIRDEM General Hospital, Dhaka, Bangladesh.

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