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A comparison of outcomes between patients with Class I and Class II obesity undergoing umbilical hernia repair: a multicenter study using the ACHQC database

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Introduction: Many surgeons consider BMI >40 prohibitive for umbilical hernia repair but often operate on patients with class I (BMI 30-34.9) and class II (BMI 35-39.9) obesity. Further controversy exists on the best approach for hernias ≤2cm, as the optimal approach is not clear. This study aims to evaluate the outcomes in umbilical hernia repair for defects ≤2cm in patients with class I and class II obesity.

Methods: A retrospective review of prospectively collected data from the ACHQC database was for adult patients with a BMI of 30.0-39.9 kg/m^2 who underwent elective UHR with a defect of ≤2cm. A propensity score matched analysis was performed based on diabetes mellitus, hypertension, chronic obstructive pulmonary disorder, and smoking status between class I and II obesity groups. A Wilcoxon rank sum and chi-squared tests were used to compare 30-day outcomes including: surgical site infection (SSI) subtypes, surgical site occurrence (SSO) subtypes, reoperation, recurrence, and readmissions between the groups.

Outcome	Class I Obesity n (%)	Class II Obesity n (%)	p-value
Re-admission	9 (1.0)	5 (0.5)	0.28
Re-operation	2 (0.2)	3 (0.3)	>0.99
Recurrence	3 (0.3)	0 (0.0)	0.25
SSI	8 (0.8)	12 (1.3)	0.37
SSO-EI	27 (2.8)	44 (4.6)	0.04
SSO/I-PI	14 (1.5)	17 (1.8)	0.59

Table 1. 30-day postoperative outcomes

SSI Subtype	Class I Obesity n (%)	Class II Obesity n (%)	p-value
Superficial infection	8 (0.8)	9 (0.9)	0.81
Deep space infection	0 (0.0)	3 (0.3)	0.25
Requiring oral antibiotics	6 (0.6)	10 (1.1)	0.32
Requiring IV antibiotics	0 (0.0)	3 (0.3)	0.25
Requiring wound opening	3 (0.3)	3 (0.3)	>0.99
Requiring debridement	1 (0.1)	2 (0.2)	>0.99
Mesh explantation	0 (0.0)	3 (0.3)	0.25

Table 2. 30-day SSI subtype outcomes

SSO-EI Subtype	Class I Obesity n (%)	Class II Obesity n (%)	p-value
Cellulitis	4 (0.4)	3 (0.3)	>0.99
Skin/soft tissue necrosis	1 (0.1)	3 (0.3)	>0.99
Seroma	16 (1.7)	26 (2.7)	0.12
Hematoma	3 (0.3)	4 (0.4)	>0.99
Serous drainage	1 (0.1)	8 (0.8)	0.039
Requiring oral antibiotics	8 (0.8)	4 (0.4)	0.25
Requiring IV antibiotics	0 (0.0)	1 (0.1)	>0.99
Requiring wound opening	5 (0.5)	4 (0.4)	>0.99
Requiring debridement	3 (0.3)	3 (0.3)	>0.99
Percutaneous drainage	7 (0.7)	5 (0.5)	0.56
Mesh explantation	1 (0.1)	1 (0.1)	>0.99

Table 3. 30-day SSO-EI subtype outcomes

Results: The total number of patients after exclusion criteria was 3146. After 1:1 PSM matching, there were a total of 1896 patients for analysis, with 948 patients in each group. Patients with class II obesity more commonly underwent minimally invasive repair (laparoscopic- 101; 11% and robotic assisted- 198; 21%) compared to the class I obesity group (laparoscopic- 59; 6.2% and robotic assisted- 153; 16%, p<0.01). Mesh was more frequently placed in the class II obesity group (67% vs 61%, p=0.019), most often in the underlay position. The operative time was shorter in the class I obesity group compared to the class II obesity group (p=0.005)

Discussion:

- Overall low rate of postoperative complications in patients with class I and class II obesity undergoing umbilical hernia repair for small hernias
- Higher rate of SSI (nonsignificant) and SSO-EI in patients with class II obesity
- No difference in wound complication subtypes between groups
  - Higher (nonsignificant) rate of seroma in class II obesity
- Future directions:
  - Comparison of mesh vs non-mesh repair; MIS vs open repair
  - Compare outcomes at 1 year, 2 years, 5 years, 10 years
- ***Low wound complication rate should not prohibit repair of umbilical hernias ≤2cm in patients with class I or class II obesity***

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