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Surgeon as a Key Risk Factor in Incisional Hernia Development: Improving Surgical Techniques in Abdominal Wall Closure Across Specialities

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Introduction

- Incisional hernia is a postoperative complication with an incidence reaching up to 40%. Although patient-related factors such as obesity, smoking, immunsupression etc. can contribute to the development of incisional hernia, the surgical technique is also significant factor. The optimal technique for abdominal wall closure (AWC) was outlined in the updated EHS guideline published in 2023.
- Although this guideline is known by general surgeons, it is not widely recognized by other surgical specialties fields that also perform abdominal closures. This lack of awareness may contribute to increased rates of incisional hernia in patients operated on by these other specialties.
- We aimed to evaluate the incisional hernia rates and knowledge levels of these specialties in AWC practices and to highlight the need for targeted training in AWC.

Methods

- Patients operated for incisional hernia between January 2013 – January 2024 retrospectively analyzed
- Recurrent cases were excluded
- A 12-question survey was prepared via Google Forms based on the updated EHS AWC guideline*
- The first 9 questions were derived from the key questions listed in the guideline. Only the 5th key question was omitted. In addition to the key questions, 3 extra questions were included regarding specialty, patient informing and awareness of the guideline
- The survey link was distributed via WhatsApp and email to specialists in urology, obstetrics&gynecology, and cardiovascular surgery, and responses were collected anonymously
- Descriptive results reported
- Primary outcome; To determine the rates of incisional hernia across different surgical specialties. Secondary outcome; To evaluate AWC knowledge among other surgical speciliaties, based on survey results.

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Results

- A total of 403 patients were included in the study. All patients underwent onlay repair. Demographic and prognostic datas are presented in Table 1, and the characteristics of the hernias are illustrated in Figure 1. Incisional hernia rates due to specilialities are presented in Table 2.

Table 1: Demographic and prognostic characteristics

Variables	Total (n=403)
Age (years)	63.93±11.67
Gender (%)	
Male	152 (37.7%)
Female	251 (62.3%)
Complications (%)	
Dehissence	5 (1.2%)
Hematoma	2 (0.5%)
SSI	3 (0.7%)
Recurrence (%)	24 (6%)
Follow-up (year)	5.78±2.62

SSI: Surgical Site Infection

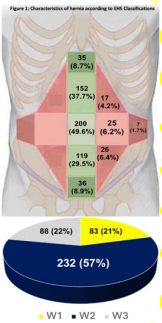

Table 2: Incisional hernia rates after first operation due to specialities

Speciality	Total (n=403)
General Surgery	316 (78.4%)
Obstetrics&Gynecology	60 (14.9%)
Urology	16 (4%)
Cardiovascular Surgery	11 (2.7%)

- A total of 35 participants completed the survey. The questions and responses stratified by specialty are presented in Table 3.

Conclusion

- Nearly one-fourth of incisional hernia cases were referred from other departments—a notably high rate in surgical practice. Further multicenter studies are needed to clarify referral patterns and address this issue.
- Survey results showed limited awareness of optimal AWC techniques in other specialties. We believe that conferences and training sessions delivered by AWC experts to these departments could help prevention of incisional hernia.

Table 3: Questions that prepared based on AWC guideline and responses of participants regarding knowledge and practice patterns for laparotomy closure

Questions	Answer Choices	O&G (n=13)	Urology (n=13)	CVS (n=9)	Total (n=35)
Which approach, minimally invasive or open, should be used in patients undergoing abdominal surgery? [KQ 1a]	*MIS*	12 (92.3%)	12 (92.3%)	8 (88.9%)	32 (91.4%)
	Open Surgery	1 (7.7%)	1 (7.7%)	1 (11.1%)	3 (8.6%)
Which incision should be used in patients undergoing abdominal surgery? [KQ 1b]	*Always Midline*	3 (23.1%)	0	2 (22.2%)	5 (14.3%)
	Depends on Surgery	10 (76.9%)	13 (100%)	7 (77.8%)	30 (85.7%)
Which incision should be used for specimen extraction? [KQ 1b]	*Always Midline*	4 (30.8%)	7 (53.8%)	5 (55.6%)	16 (45.7%)
	Depends on Surgery	9 (69.2%)	6 (46.2%)	4 (44.4%)	19 (54.3%)
Should trocar sites be closed in patients undergoing laparoscopic surgery? [KQ 2]	*Yes, all trocar site should be closed*	6 (46.2%)	3 (23.1%)	2 (22.2%)	11 (31.4%)
	Yes, only 10 mm and larger should be closed	6 (46.2%)	8 (61.5%)	4 (44.5%)	18 (51.4%)
	There is no need to close the trocar site	1 (7.7)	2 (15.4%)	3 (33.3%)	6 (17.2%)
Which type of suture material should be used for abdominal wall closure? [KQ 3]	*Nonabsorbable*	1 (7.7%)	1 (7.7%)	3 (33.3%)	5 (14.3%)
	Quickly absorbable	0	1 (7.7%)	1 (7.7%)	2 (5.7%)
	Slowly absorbable	12 (92.3%)	11 (84.6%)	5 (59%)	28 (80%)
Are you familiar with the "Small Bite" technique in abdominal wall closure? [KQ 3]	*Yes*	5 (38.5%)	3 (23.1%)	3 (33.3%)	11 (31.4%)
	No	8 (61.5%)	10 (76.9%)	6 (66.7%)	24 (68.6%)
Do you know about risk factors associated with the development of incisional hernias, and do you implement any strategies to mitigate them? [KQ 4]	*Yes*	12 (92.3%)	8 (71.5%)	5 (55.6%)	25 (71.4%)
	No	1 (7.7%)	5 (38.5%)	4 (44.4%)	10 (28.6%)
Are postoperative abdominal binders advantageous after open abdominal surgery? [KQ 6]	*Yes*	12 (92.3%)	7 (53.8%)	7 (77.8%)	26 (74.3%)
	No	1 (7.7%)	6 (46.2%)	2 (22.2%)	9 (25.7%)
Is restriction of activity advantageous after open abdominal surgery? [KQ 7]	*Yes*	12 (92.3%)	10 (76.9%)	8 (88.9%)	30 (85.7%)
	No	1 (7.7%)	3 (23.1%)	1 (11.1%)	5 (14.3%)
Do you inform your patients with midline incisions about the risk of developing an incisional hernia at the time of discharge?	*Yes*	12 (92.3%)	5 (38.5%)	5 (55.6%)	22 (62.9%)
	No	1 (7.7%)	8 (71.5%)	4 (44.4%)	13 (37.1%)
Are you aware of the European Hernia Society Abdominal Wall Closure guideline?	*Yes*	4 (30.8%)	2 (15.4%)	3 (33.7%)	9 (25.7%)
	No	9 (69.2%)	11 (84.6%)	6 (66.7%)	26 (74.3%)

AWC: Abdominal Wall Closure, O&G:Obstetrics and Gynecology, CVS: Cardiovascular Surgery, KQ: Key Question, MIS:Minimal Invasive Surgery