Skin closure in laparoscopic surgery – A UK based cross sectional survey

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Purpose of study:

Effective port site closure is a major mediator of patient reported outcome measures in laparoscopic surgery. Subcuticular sutures are traditionally used to close laparoscopic trocar sites, requiring skill and sufficient time to achieve favourable cosmetic outcomes. Skin re-approximation using tissue adhesives such as octylcyanoacrylate have benefits associated with aftercare, cosmetic results, time efficiency, and wound complication rates attributed to favourable bacteriostatic properties. [1-3] Despite this, there remains poor uptake of its use in clinical practice. Our aim was to gain insight into port site closure techniques favoured by a sample of laparoscopic surgeons.

Statement of methods:

A standardised questionnaire was developed and distributed electronically to laparoscopic surgeons in the United Kingdom and Republic of Ireland. Questions were pertaining to closure material and technique. Data was collected prospectively and analysed using Prism GraphPad.

Results:

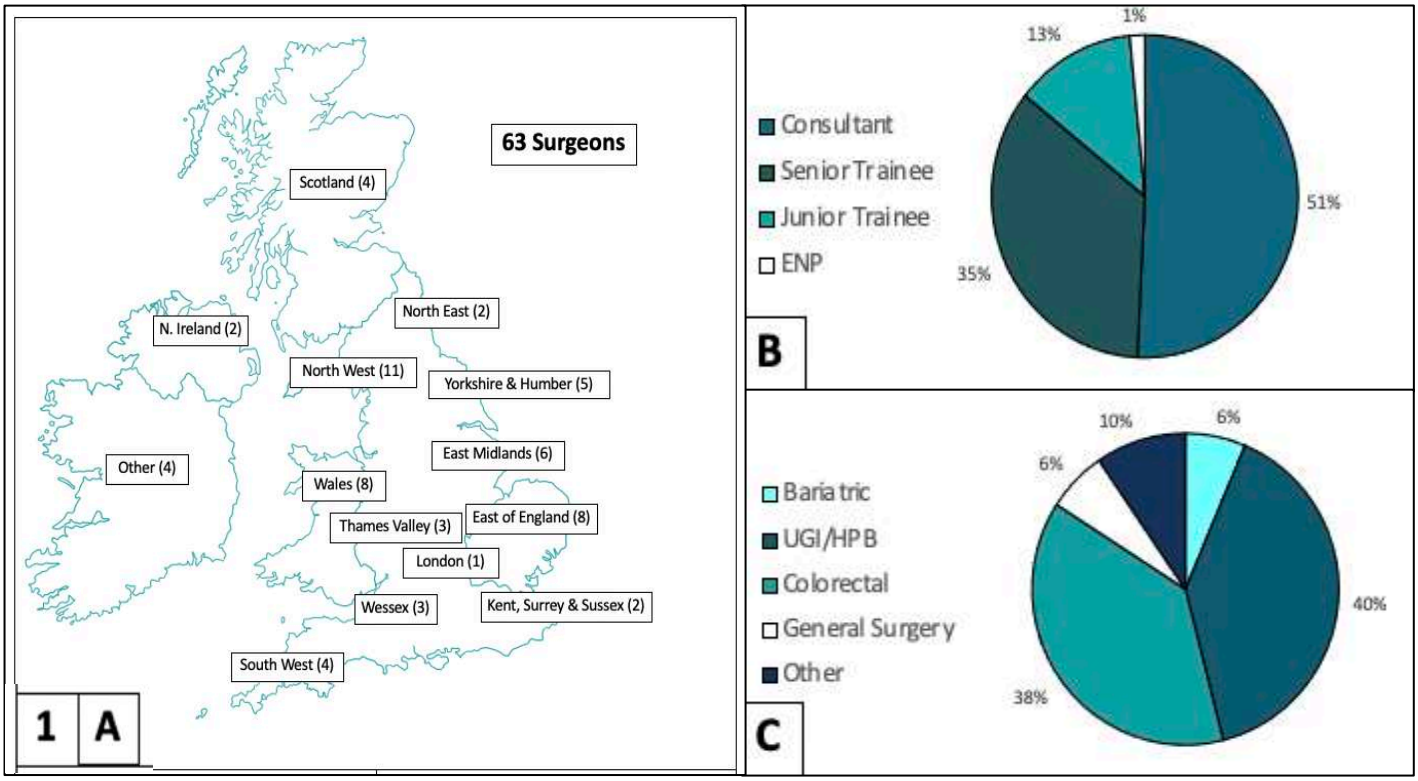
63 surgeons from 14 different regions, participated in our study. A broad range of specialities and training grades were represented within our cohort. (Figure 1)

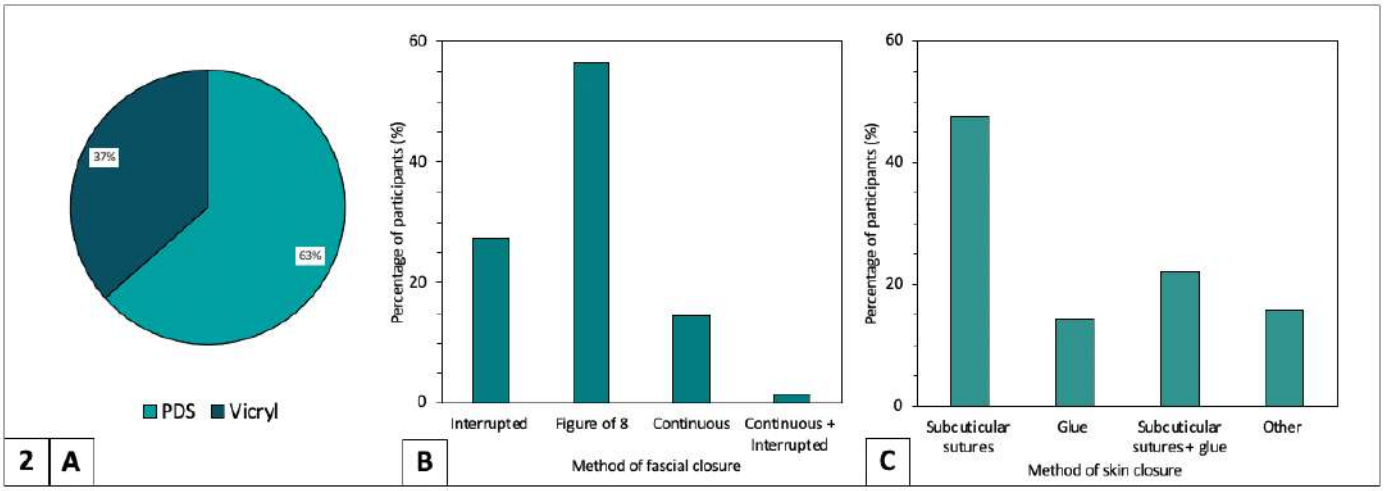
Regarding umbilical port sites <5mm we found, 47.62% of participants (n=30) used subcuticular sutures, 14.28% (n=9) used glue alone, and 22.22% (n=14) used glue in combination with sutures or steri-strips. (Figure 2C)

For larger port sites >5mm we found 61.90% (n=39) used subcuticular sutures, 6.34% (n=4) used glue alone and 22.22% (n=14) used subcuticular sutures and glue in combination. 9.52% (n=6) used other methods of closure such as staples and sutures in combination with steri-strips. (Figure 3C)

Conclusion:

Despite the many benefits of skin adhesive assisted closure, its uptake remains low in clinical practice. We suggest an approach targeting improvements in awareness and education to positively impact decision making regarding methods of trocar site closure.


63 Surgeons
Scotland (4)
N. Ireland (2)
North East (2)
North West (11)
Yorkshire & Humber (5)
East Midlands (6)
Other (4)
Wales (8)
Thames Valley (3)
East of England (8)
London (1)
Wessex (3)
Kent, Surrey & Sussex (2)
South West (4)
1 A
Consultant
Senior Trainee
Junior Trainee
ENP
1%
13%
51%
35%
B
Bariatric
UGI/HPB
Colorectal
General Surgery
Other
10%
6%
6%
40%
38%
C


37%
63%
PDS
Vicryl
2 A
Percentage of participants (%)
Interrupted
Figure of 8
Continuous
Continuous + Interrupted
Method of fascial closure
B
Subcuticular sutures
Glue
Subcuticular sutures+ glue
Other
Method of skin closure
C

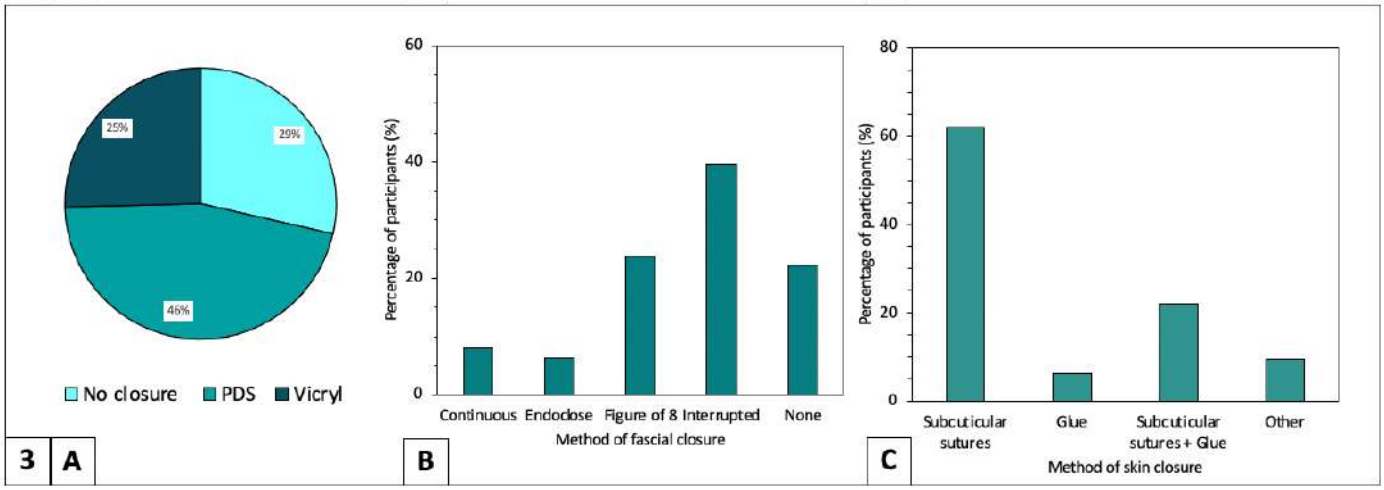

25%
29%
46%
No closure
PDS
Vicryl
3 A
Percentage of participants (%)
Continuous
Endoclose
Figure of 8
Interrupted
None
Method of fascial closure
B
Subcuticular sutures
Glue
Subcuticular sutures + Glue
Other
Method of skin closure
C

Figure 1. Demographic details of our study cohort. 63 Surgeons were included **A) Map of the UK demonstrating number of participants per region. B) Pie chart to demonstrate level of training of participants.** 32 consultants (51%), 22 senior trainees (ST5-ST8) (35%), 8 junior trainees (CST – ST5) (13%) and 1 allied healthcare professional (1%) were included in our study. **C) Specialty distribution of participants.** Of respondents, 39.68% (n=25) were UGI/HPB surgeons, 38.10% (n=24) were colorectal surgeons, 6.35% (n=4) of participants were general surgeons and 6.35% (n=4) specialised only in bariatric surgery. 9.52% (n=6) of surgeons were from other surgical specialties.

Figure 2. Methods and materials used for umbilical trochar sites (<5mm). A) Self-reported preference for suture material used for closure of umbilical port sites (<5mm). PDS was favoured by 63.49% (n=40). 36.51% preferred Vicryl over PDS (n=23) (MPD = 26.98%). **B) Self-reported methods of fascial closure used for umbilical port sites (<5mm).** All participants reported routine sutured fascial closure at umbilical port sites. Of suturing techniques used; Figure of 8 was most common, (56.45% n=35), followed by interrupted sutures (27.42%, n=17). Continuous sutures were used by 14.52% (n=9)alone, and were reinforced by interrupted sutures by 1.61% (n=1) (total n=62). **C) Self-reported methods of skin closure used for umbilical port sites (<5mm).** Subcuticular sutures were used by 47.62% of participants (n=30). Glue was used alone by 14.29% (n=9). Subcuticular sutures in combination with glue were used by 22.22% (n=14), other closure methods (eg. steri-strips, staples) were used routinely by 15.87% (n=10).

Methods and materials used for non-umbilical port sites (>5mm). A) Self-reported preference for suture material used for closure of non-umbilical port sites (>5mm). 28.57% (n=18) did not routinely close non-umbilical port sites, 46.03% (n=29) favoured PDS, whereas 25.40% (n=16) preferred Vicryl. **B) Self-reported methods of fascial closure used for non-umbilical port sites (>5mm).** 22.22% (n=14) did not routinely close fascia at non-umbilical sites. 39.68% (n=25) favoured interrupted sutures, followed by figure of 8 (23.81%, n=15), continuous (7.94% n=5) and endoclose (6.35% n=4). **C) Self-reported methods of skin closure used for non-umbilical port sites (>5mm).** Subcuticular sutures were the favoured method of closure. (61.90% n=39), glue was used alone by 6.35% (n=4). 22.22%, (n=14) favoured a combination of subcuticular sutures and glue. Other methods were used by 9.52% (n=6).

Biography:

Frances is passionate about reconstructive surgery, and has a background in biomedical engineering which inspires her interest in improving service delivery through the use of innovation and technology. She is currently working as a Clinical Teaching Fellow in Anatomy at Barts and the London, Queen Mary University of London, having completed her foundation training at Princess Alexandra Hospital in Harlow. She has been involved in a number of multi-centre collaborative projects and also has experience in lab-based research having previously published in Journal of Clinical Biomechanics. She has previously undertaken a PG Cert in Clinical Education, and is currently involved in the design and delivery of the MBBS undergraduate and graduate entry programmes at Barts and the London.

References:

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