

Study Summary

Influence of multiple stapler firings used for rectal division on colorectal anastomotic leak rate

A retrospective database review.

Braunschmid T, Hartig N, Baumann L et al. Surg Endosc. 2017;31(12):5318-5326.

Conclusion

An important risk factor for anastomotic leak during colorectal resection is the use of multiple stapler firings during rectal division

Study Aim

To determine whether multiple linear stapler firings during rectal division has an impact on anastomotic safety.

Methods

- Analysis of 382 patients from a hospital database who underwent rectal division with linear staplers and subsequent colorectal anastomosis
- All procedures (sigmoid resections, left hemicolectomies, high anterior resections, low anterior resections) took place between November 2008 and December 2014 at a single centre in Austria
- All anastomoses were created intracorporeally. The rectal stump was closed with 1–6 firings of a linear stapler; colorectal anastomosis was done using a circular stapler (in 55% of patients) or a compression device (in 45% of patients)
- Suspected anastomotic leakage was confirmed using computed tomography

Primary Endpoints:

- Occurrence of anastomotic leak

Secondary Analyses:

- Risk factors for anastomotic leak
- Risk factors for frequency of stapler firing



The secondary analyses investigated the impact of patient and surgical factors using statistical models



Results

Anastomotic Leak



Anastomotic leak occurred in 4.7% of patients and extended length of stay from 8 days to 27.5 days

Impact of staple firing on anastomotic leak rates

Additional linear stapler firings during rectal division was the only factor that was associated with increased risk of anastomotic leak.

Number of cartridges	Patients with leak	P value
1	6/223 (2.7%)	0.002
2	6/128 (4.7%)	
≥3*	6/31 (19.4%)	

*Maximum of 6 stapler cartridges

All other factors considered (surgical approach, gender, age, diagnosis etc) were not identified to be risk factors.

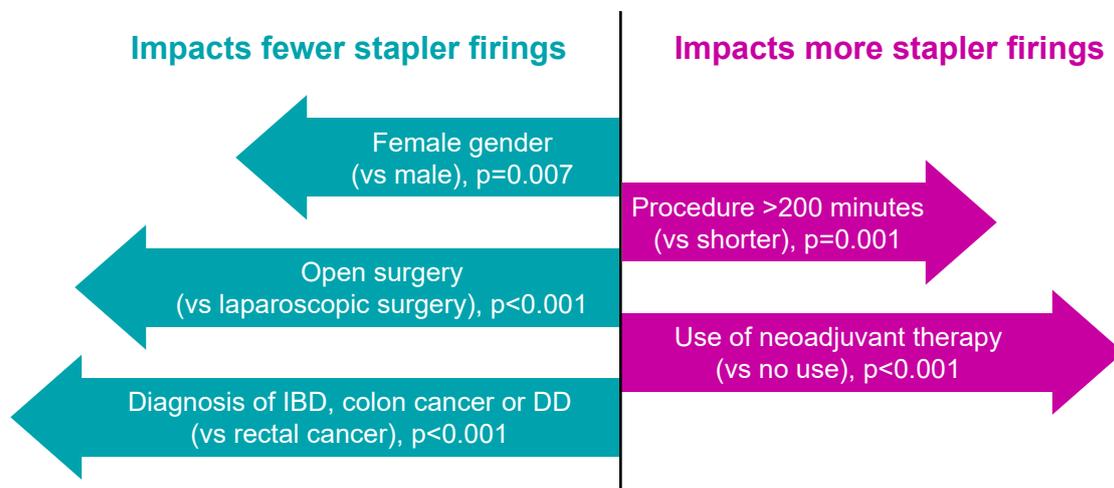


An adjustment to the surgical approach (such as use of an additional trocar or a small laparotomy) should be considered to help minimise the number of stapler cartridges used

Factors Affecting the Number of Stapler Firings for Rectal Transection

Several factors were identified that either reduced or increased the likelihood of staple firings. These could be considered to help address the risk factor for anastomotic leak.

Factors with greatest impact on stapler firings



DD: diverticular disease; IBD: inflammatory bowel disease