

A less invasive technique for laparoscopic surgery of transabdominal preperitoneal repair for groin hernia: single port with one needle forceps.

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Introduction

- For the transabdominal preperitoneal repair (TAPP) for inguinal hernia, single port surgery (SPS) has been reported to reduce the abdominal wall damages.
- However, the incision of the naval tends to be bigger, less cosmetic and the surgical technique of SPS TAPP is not easier than conventional method for all the surgeons.
- We introduce the SPS plus one puncture (POP-SPS) method as a new procedure and study the safety and usefulness of this method from the point of operation time, postoperative stay, and complications compared with conventional TAPP (C-TAPP) .

Patient and hernia characteristics of POP-SPS

Number of the patient		240
(January 2015-August 2019, including recurrence cases)		
Age (Median) :		70 (22-99)
Gender	Male	204
	Female	36
Location :	Right	110
	Left	84
	(Bilateral 46)	
Type of hernia :	Indirect	201
	Direct	88
	Combined or Other	14
Recurrence		8

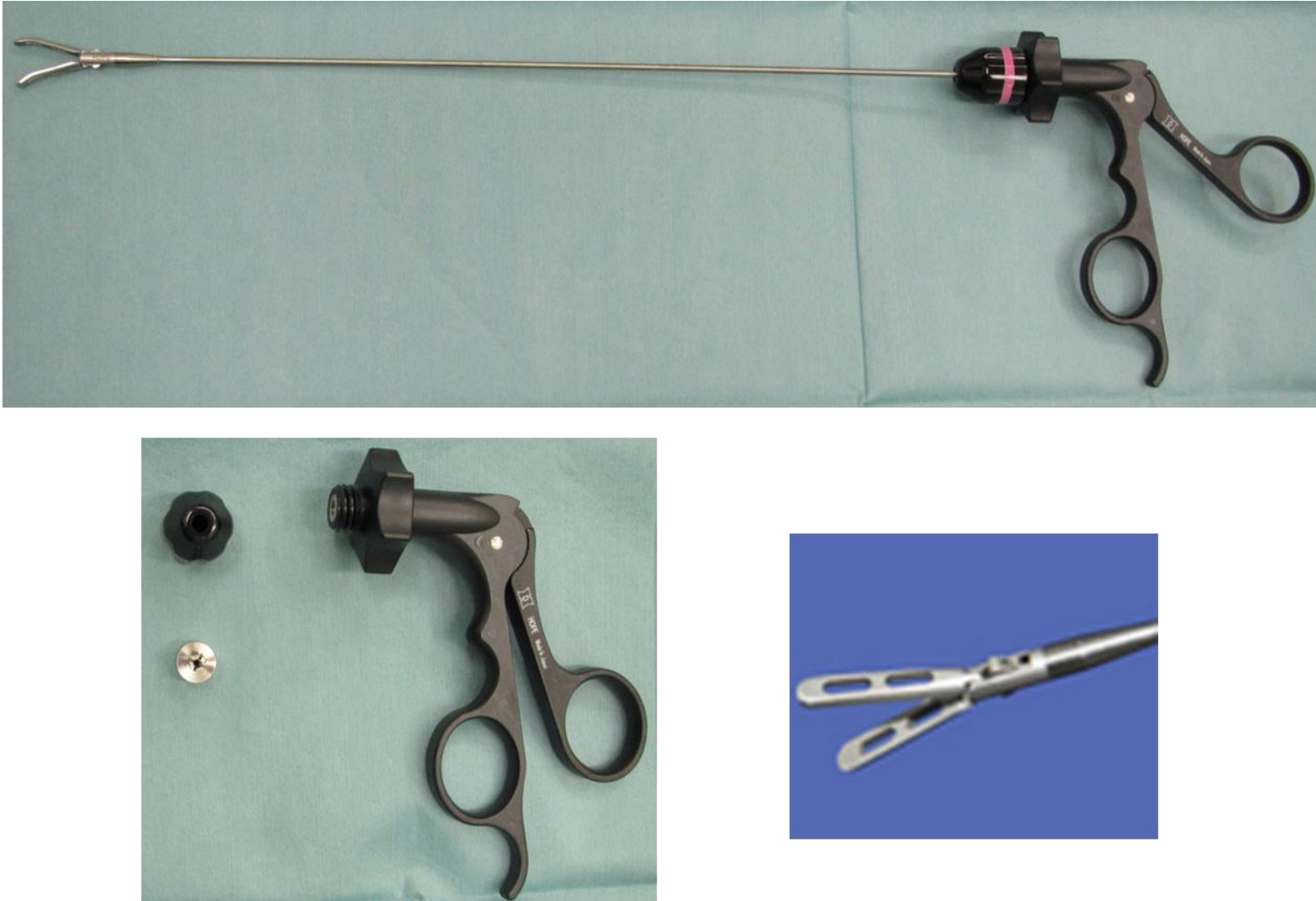
Techniques for POP-SPS

- Two 5mm ports (1 for the scope and 1 for the forceps) through an umbilical multi-channel port (EZ access®).
- An additional 2.4mm needle instrument (Endo Relief® needle holder type) is pierced above the pubic bone.
- A 5mm flexible scope allows us to keep the triangular formation easily.

Tools (ports) for naval incision

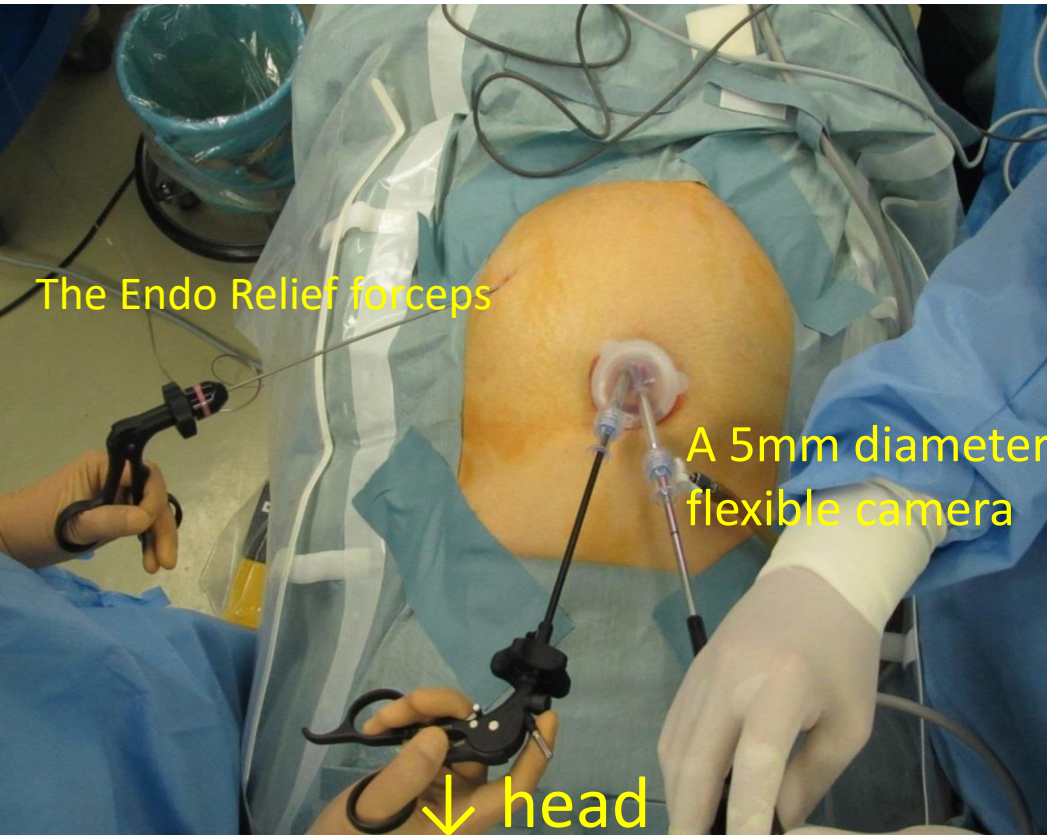


A needle device, Endo Relief®



The patient position and port arrangements

- The surgeon stands on the left side of the patient, for manipulating energy devices by the right hand.
- The left hand of the patient is tightened to the body.
- The head of the patient is put on the left side and the body position is diagonal to the surgical table.



Result 1

Comparison of the operation time and hospital stay

Median operation time		n=
unilateral	POP-SPS	69min(36-155min)
	C-TAPP	77min(53-140min)
bilateral	POP-SPS	129min(61-269min)
	C-TAPP	156min(105-176min)
Hospital stay		
POP-SPS	4 (2-6) days	
	C-TAPP	4 (2-32) days
Postoperative stay		
POP-SPS	2 (1-5) days	
	C-TAPP	4 (1-24) days

Result 2

Complication and recurrence

Operative complications	
POP-SPS	spermatic cord injury
	3/240 (1.25%)
	postoperative seroma
	5/240 (2.08%)
C-TAPP	umbilical infection
	1/240 (0.42%)
	incisional hernia
Relapse after the operation	
POP-SPS	none
	1/15 (6.66%)
C-TAPP	postoperative seroma
	1/15 (6.66%)

※No lethal complications was occurred.

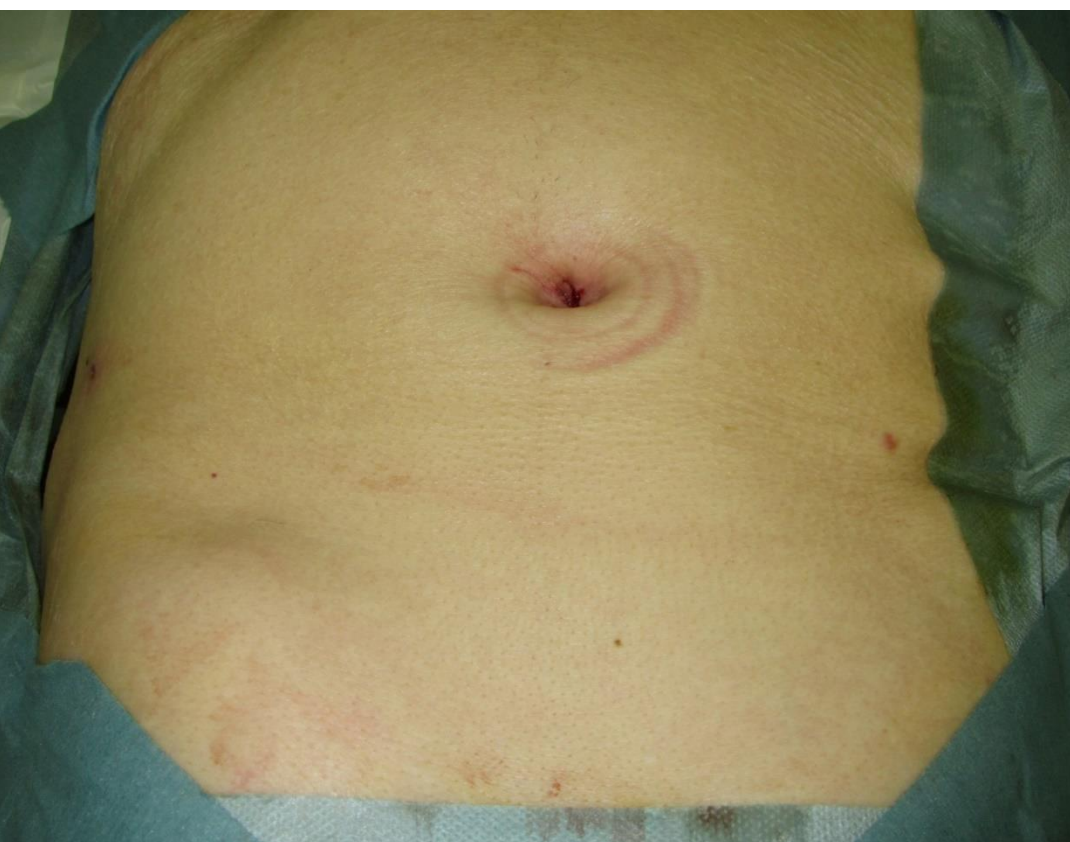
Result3

How to deal with the difficult cases

Case	Factor	operation time	How to deal	hospital stay	complication
1	recurrence	62	+ one forceps	3	none
2	recurrence	70	+ one forceps	3	none
3	recurrence	128	+ two forceps	3	additional drug
4	Colon incompetent	148	+ one forceps	3	none
5	Post prostatectomy	133	+ one forceps	2	none
6	Post prostatectomy	152	convert to open method	3	bleeding over 300 ml
7	Post prostatectomy	154	+ one forceps	2	none

Operation scar

Just after operation



Two months later



- There is no difference between our POP-SPS and conventional TAPP in operation time, hospital stay and complication rate.
- The umbilical operation scars and the pierced needle instrument scars became gradually invisible within 1 or 2 months.

Conclusion

- The POP-SPS is demonstrated as a novel minimally invasive approach of laparoscopic inguinal hernia repair.