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The effect of body mass index (BMI) on Sacrospinous Ligamentopexy (SSLP) Surgery

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İstanbul, Haziran, 2023

Aim

- Sacrospinous ligamentopexy (SSLP) is a procedure performed with the vaginal approach in apical pelvic organ prolapse (POP), concomitant to hysterectomy, or not.

- However, the effect of body mass index (BMI) on various surgeries has been shown in many studies, but its effect on SSLP surgery has not been studied thoroughly.

- This study aimed to compare the patients who underwent SSLP operation in a tertiary center according to BMI.

Pelvic Organ Prolapse

The **pelvic floor** is divided into 3 zones

Anterior zone
(ExternalUretralmeatus-Bladder neck)

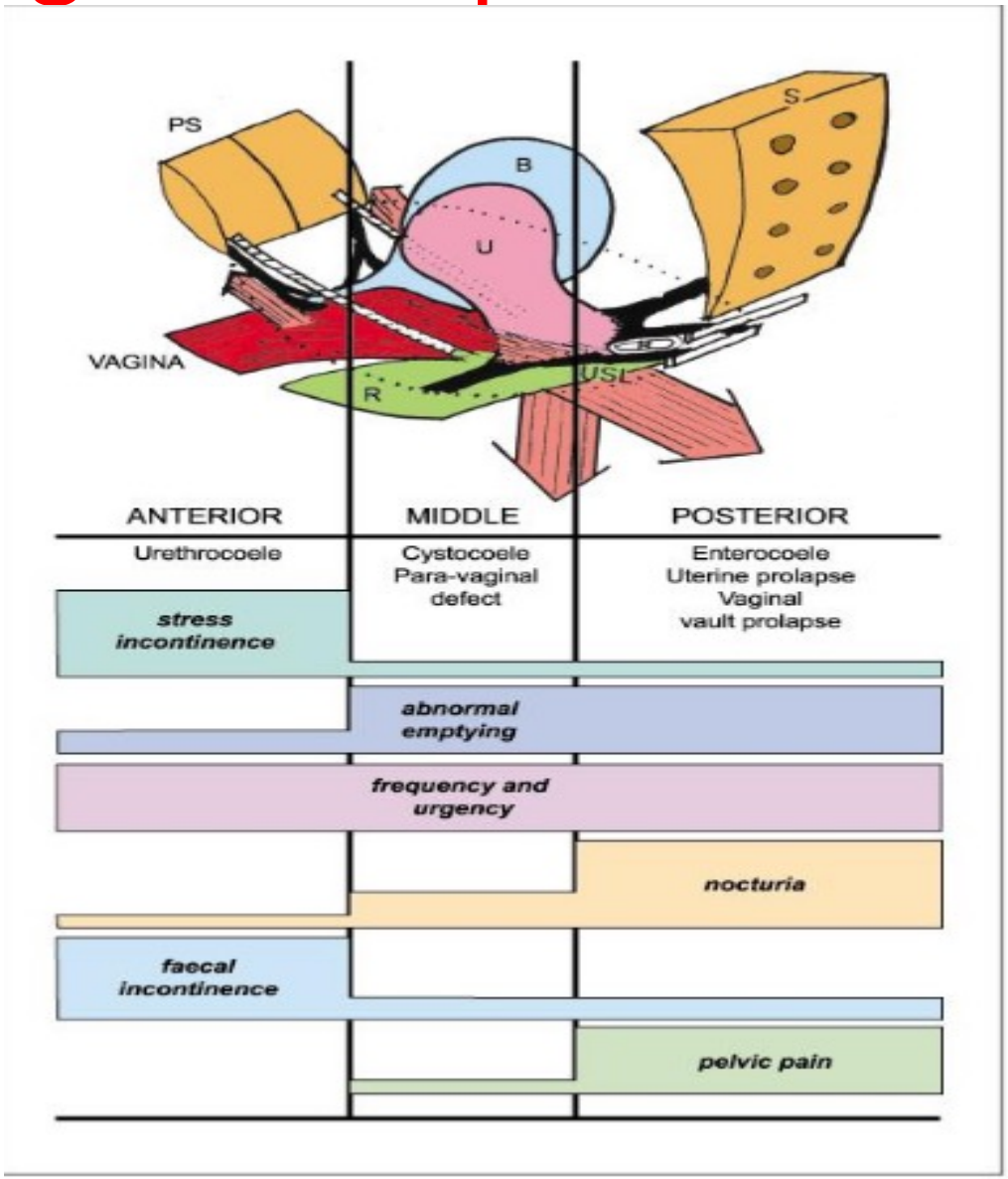
- External urethral ligament
- Suburetral hammock
- Pubourethral ligament

Mid zone
(MB-Cervix/hysterectomy scar)

- ATFP
- Pubocervical fascia
- Critical zone of elasticity

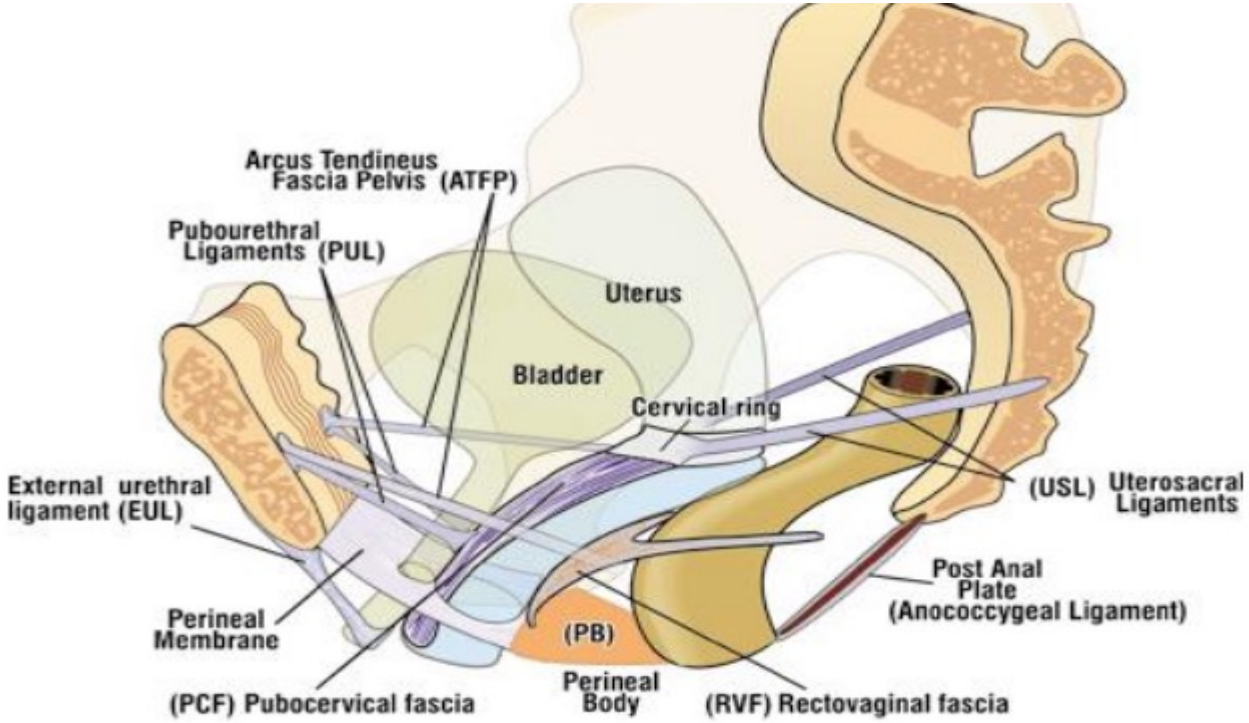
Posterior zone
(S/HS-Perineal body)

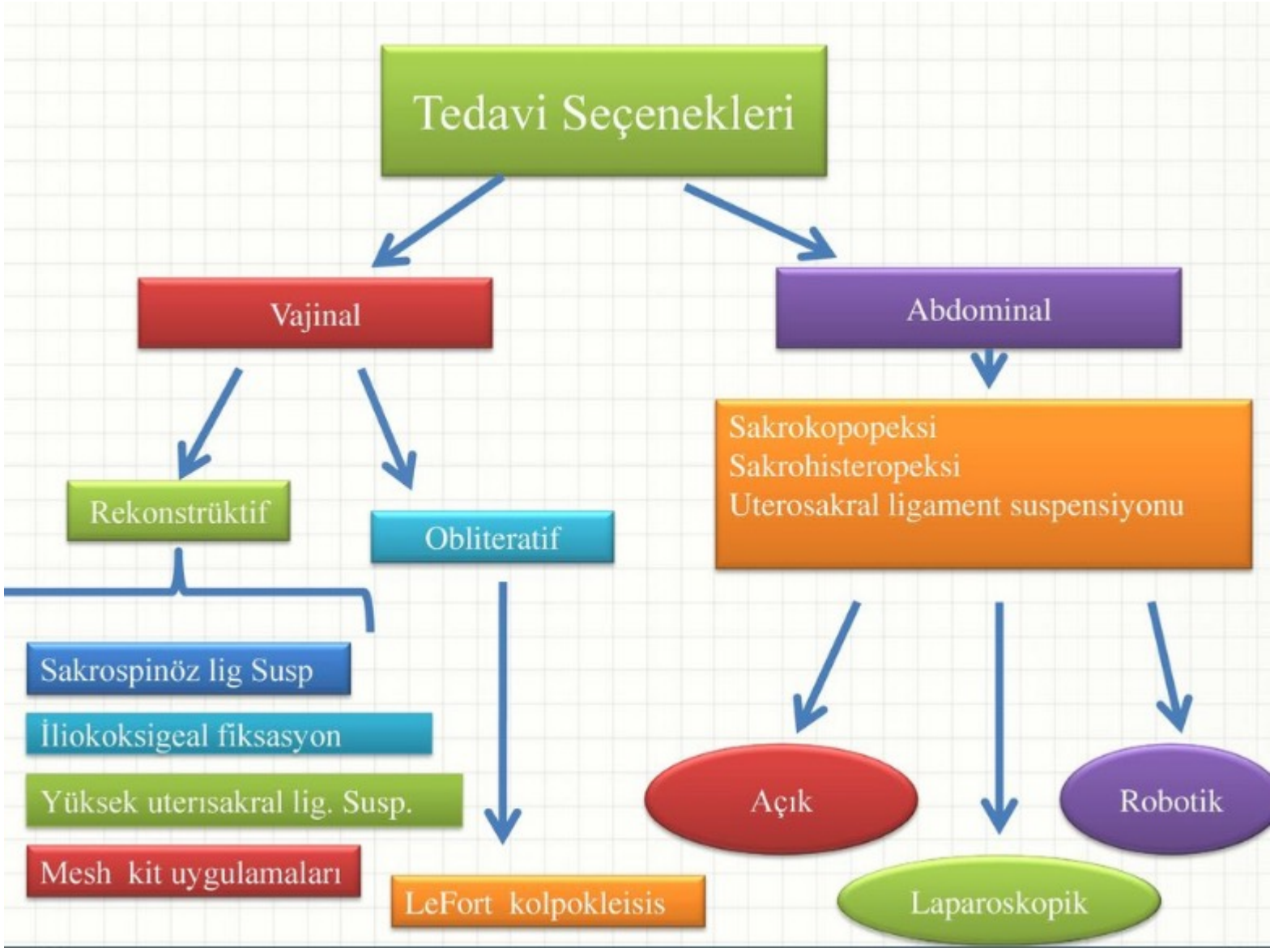
- Uterosacral ligament
- Rectovaginal fascia
- Perineal corpuscle



Apical prolapse

Downward displacement of the vaginal apex (uterus, cervix, or vaginal cuff).




Tedavi Seçenekleri
Vajinal
Abdominal
Rekonstrüktif
Obliteratif
Sakrokopopeksi
Sakrohisteropeksi
Uterosakral ligament suspensiyonu
Sakrospinöz lig Susp
İliokoksigeal fiksasyon
Yüksek uterısakral lig. Susp.
Mesh kit uygulamaları
LeFort kolpokleisis
Açık
Robotik
Laparoskopik

Sacrospinous ligamentopexy (SSLP)

- Richter,1968
- Popularity after Randall and Nichols, 1971

- ***It is necessary to know anatomy well for this procedure!!!***

RichterK,GeburtshilfeFrauenheilkd.1968
RandallCLveNicholsDH,ObstetGynecol.1971

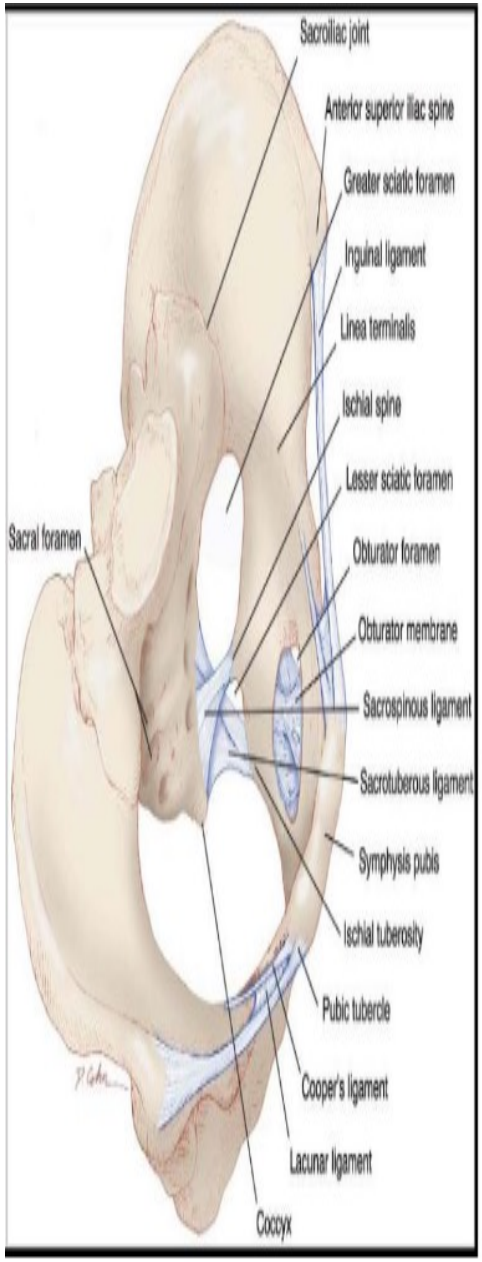
Method

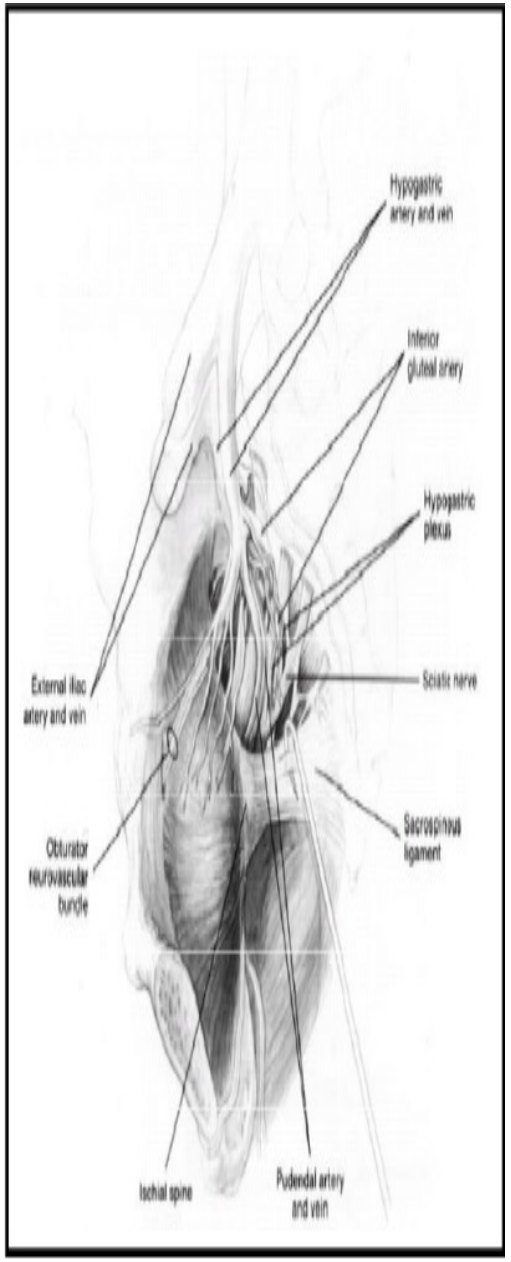
- In SSLP operation, after a longitudinal incision in the posterior vaginal wall, the sacrospinous ligament is reached from the rectovaginal space by dissection.
- Then, a non-absorbable suture (1.0 polydioxanone) is thrown to the sacrospinous ligament with a suture carrier,
- 2 cm medial to the ischial spine to ensure that the neurovascular bundle is not damaged,
- Two sutures are created and the vaginal mucosa is closed after the sutures are fixed to the vaginal cuff.
- The process is done unilaterally.

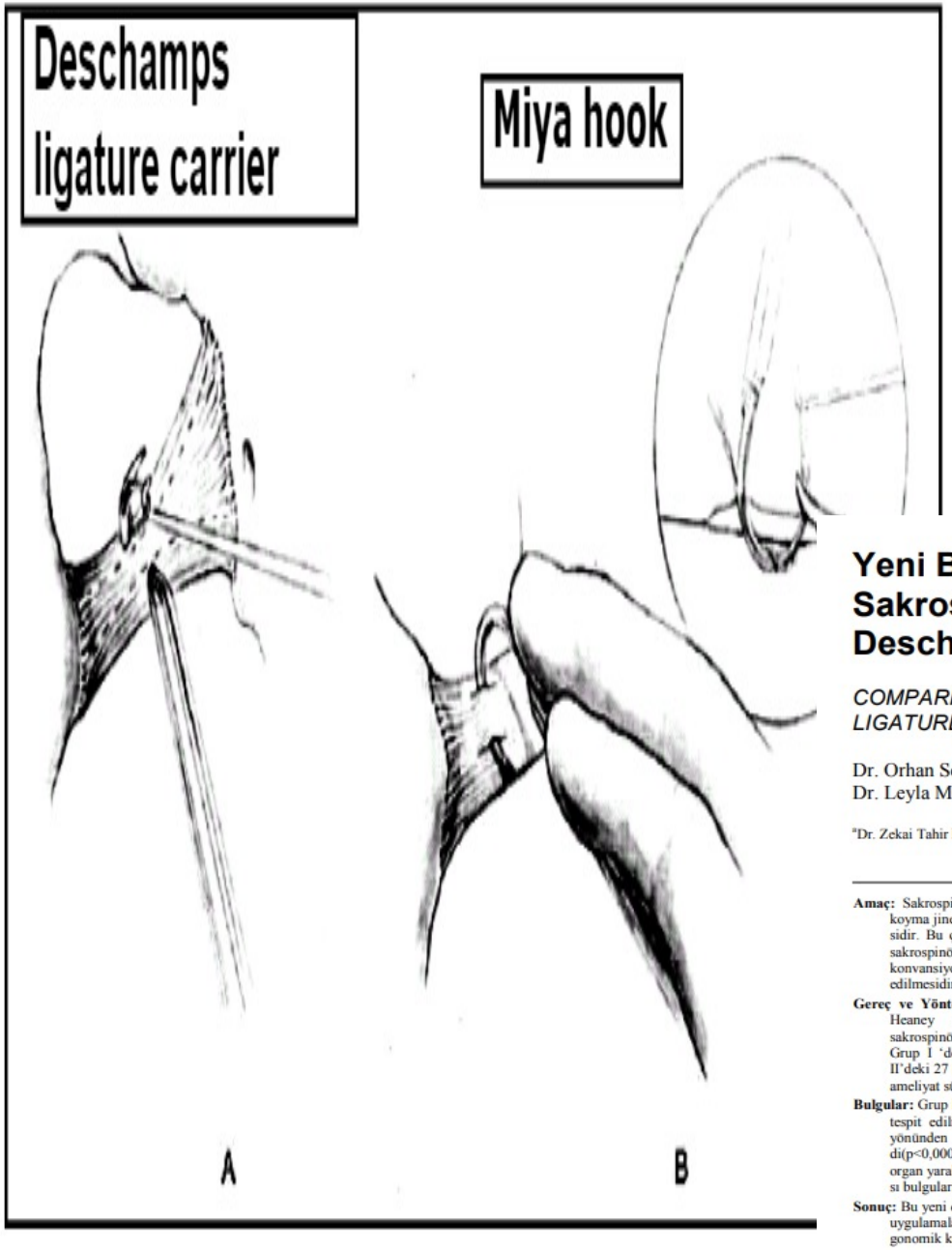
– Anatomical studies have shown that the pudendal complex (pudendal artery and nerve) and sciatic nerve pass even **5.5 cm** medial to the spina ischiadica.

– The technique applied bilaterally has not been shown to be superior to the technique applied unilaterally.

SagsozN,ObstetGynecol ReprodBiol.2002ArbelR,BestPractResClinObstetGynaecol .2005







ORİJİNAL ARAŞTIRMA / ORIGINAL RESEARCH

Yeni Bir Sütür Tabancasının Sakrospinöz Ligament Fiksasyonunda Deschamps Sütür Taşıyıcı İle Karşılaştırılması

COMPARISON OF A NEW SUTURING GUN WITH DESCHAMPS SUTURE LIGATURE CARRIER IN SACROSPINOUS LIGAMENT FIXATION

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Özet

Amaç: Sakrospinöz ligament fiksasyonu gibi derin alanlarda dikiş koyma jinekolojik cerrahide zorluk çekilen uygulamalardan birisidir. Bu çalışmanın amacı yeni geliştirilen sütür tabancasının sakrospinöz ligament fiksasyonu amacıyla kullanımının konvansiyonel yöntemlerle karşılaştırılarak etkinliğinin tespit edilmesidir.

Gereç ve Yöntemler: Randomize olarak seçilen iki grup hastaya Heaney yöntemiyle vaginal histerektominin ardından sakrospinöz ligament fiksasyonu işlemi uygulandı. Bu işlem için Grup I 'deki 30 hastada Deschamp's sütür taşıyıcı, ve Grup II'deki 27 hastada yeni sütür tabancası kullanıldı. Yaş, parite ve ameliyat süresi gruplar arasında karşılaştırıldı.

Bulgular: Grup I ve II arasında yaş ve parite bakımından anlamlı fark tespit edilmezken, ligamentin fiksasyonunda harcanan zaman yönünden Grup II lehine anlamlı farklılık tespit edildi(p<0,0001). Hiçbir hastada transfüzyon gerektiren kanama ve organ yaralanması olmadı. Postoperatif izlemde sinir yaralanması bulguları saptanmadı.

Sonuç: Bu yeni dikiş tabancası çağdaş pelvik düzeltici cerrahinin kimi uygulamalarını kolaylaştıracak gibi görünmektedir. Ancak, ergonomik kullanım için geliştirilmesine ihtiyaç vardır.

Anahtar Kelimeler: Yeni sütür tabancası, Deschamp's sütür taşıyıcı, Sakrospinöz ligament fiksasyonu

Abstract

Objective: Suture placement at deep body regions such as sacrospinous ligament fixation is one of the most difficult procedures in gynecologic surgery. The goal of this trial is comparison of a new suturing gun with a conventional method for effectiveness in sacrospinous ligament fixation.

Material and Metods: In randomly selected two groups of patients sacrospinous ligament fixation performed after vaginal hysterectomy by Heaney procedure. In group I (30 patients) Deschamp's suture ligature carrier and in group II (27 patients) new suturing gun used for ligament fixation. Age, parity and duration of ligament fixation compared among groups.

Results: There is no difference between age and parity among groups. An significant statistical difference observed in the time spent for ligament fixation in favor of group II (p< 0.0001). Transfusion requiring bleeding and organ laceration did not occurred. In postoperative course, signs of nerve injury observed in none of the patients.

Conclusion: This new suturing gun, seems to ease various applications of contemporary pelvic surgery. But, the device needs to be developed for ergonomic usage.

Key Words: The new suturing gun, Deschamps suture ligature carrier, Sacrospinous ligament fixation

Turkiye Klinikleri J Gynecol Obst 2005, 15:20-24

Method

- SSLP operations performed as described (including concomitant operations in which vaginal hysterectomy, retropubic sling, and colporrhaphy anterior and/or posterior) and also in hysterectomized women with prolapse of the vaginal cuff were included in the study.

- Other cases in which the described operation was not applied and those whose data could not be reached were excluded.

Method

- Cases of SSLP performed between **2014 and 2022** were retrospectively reviewed.

Body mass index (BMI) **below 30 (group 1, non-obese)**

above 30 (group 2, obese)

- Demographic and obstetric histories, POP classification (POP-Q), surgical features, and postoperative complications were compared.

Results

- A total of 50 cases were divided into two groups according to BMI,
- 20 cases in group 1 (non-obese)
- 30 cases in group 2 (obese)

- The mean age of the cases was 63.3±9.48 years
- The body mass index was 30±4.27 kg/m^2

Table 1: Comparison of groups according to demographic, obstetric, and other characteristics

Table 1	Group 1 BMI <30 N=20 %40	Group 2 BMI ≥30 N=30 %60	Total N=50 %100	P value
	Mean± Std. Deviation	Mean± Std. Deviation	Mean± Std. Deviation	
BMI(kg/m^2)	25.93±2.86	32.97±2.24	30.1±4.27	,000
Age	61±10	65±9	63.3±9.48	,096
Gravidity	5±2	5±2	4.7±1.85	,435
Parity	3±2	4±1	3.7±1.53	,181
Abortus	1±1	1±1	.96±1.29	,608
POP-Q stage Apikal	4±0	4±0	3.8±.40	,551
Posterior	3±2	2±1	1.8±1.54	,476
Anterior	2±2	2±1	2.4±1.51	,919
The duration of surgery (min.)	101.82±47.97	127.89±50.53	118.33±50.41	,195
Hospital stay (day)	3±1	2±1	2.5±1.01	,506
Preoperative Hb (gr/dl)	13±1	13±1	13.0±.99	,216
Preoperative Hct (%)	40±3	41±3	40.2±2.95	,832
Postoperative Hb (gr/dl)	10±2	11±1	10.5±1.67	,356
Postoperative Hct (%)	34±4	33±3	32.9±3.51	,198
Delta Hb (gr/dl)	2.08±1.21	2.57±1.05	2.3±1.13	,110

*Mann Withney U test

Abv: BMI;Body mass index, POP-Q; classification of pelvic organ prolapse, Hb; hemoglobin, Hct; hematocrit, Min; Minnute

- The mean **POP-Q stage for apical, posterior and anterior** were 3.8±0.4, 1.8±1.54, and 2.4±1.51, respectively, and were **similar between groups.**

- The **duration of surgery** was 101.82±47.97 minutes in group 1 and 127.89±50.53 minutes in group 2, which was statistically similar ($p>0.05$).

- The mean **hospital stay** of the patients was 2.5±1.01 days and delta hemoglobin was 2.3±1.3 g/dl.

Table 2: Comparison of groups according to surgical characteristics

Table 2		Group 1 BMI <30 N=20 %40	Group 2 BMI ≥30 N=30 %60	P value
Previous type of birth	Vaginal birth	18 90%	26 86,7%	,544
	Cesarean section	2 10%	4 13,3%	
Presence of prior hysterectomy	Not available	9 45,0%	11 36,7%	,803
	Vaginal approach	4 20,0%	8 26,7%	
	Abdominal approach	7 35,0%	11 36,7%	
Concominant hysterectomy with vaginal approach	Not available	11 55,0%	19 63,3%	,556
	Available	9 45,0%	11 36,7%	
Complications	Not available	19 95,0%	28 93,3%	,303
	Intestinal injury	1 5,0%	0 ,0%	
	Surgical site infection	0 ,0%	2 6,7%	

* Chi-Square test

- The 20 patients (9 cases belonging to group 1 and 11 cases belonging to group 2) underwent **concomitant vaginal hysterectomy** with SSLP for descending uteri and no significant difference was found between the groups.

- **Postoperative complications** presented in Table 2, were observed in only 3 cases (an intestinal injury and two surgical site infections) and no significant difference was found between the groups ($p>0.05$)

DISCUSSION

SSLP succes rate

Carey , 1994	n=46/63	%73
Sauer, 1995	n=15/24	%97
Peters, 1995	n=23/30	%77
Hardiman, 1998	n=122/125	%98
Paraiso, 1998	n=223/243	%92
Benson, 1998	n=37/42	%88
Meschia, 1999	n=85/91	%93
Güner, 2001	n=23/26	% 88
Güner, 2009 np	n=94/102	% 95
Lantzsch, 2002	n=119/123	%97
Lovatsis, 2002	n=194/200	%97
Elghorori, 2002	n=69/77	%90

Complications

–Acute hemorrhagia
From Lovatsis's series=200, 0%

–Death
1982-2001, only 1 case (n=700)

Intraop. Complication: 3-6%
–Pudental vein,nerve
–Perirectal and sacral vein injury

LovatsisD,CurrOpinObstetGynecol.2003
GünerH, Gynecological and obstetricalsurgery.2005
ArbelR,BestPractResClinObstetGynaecol.2005

Long term complications

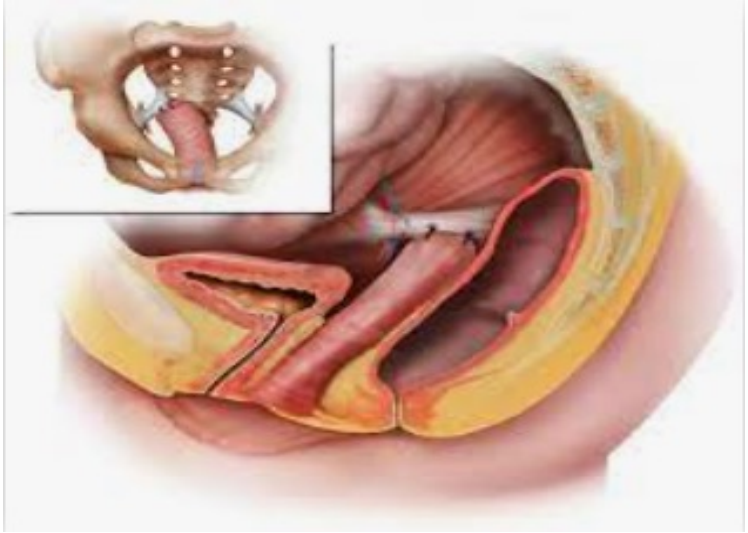
•De novo cytocele formation

–HolleyRL: 92% (n=33/36), most asymptomatic
– Posterior displacement of the vaginal lax
–The place of the routine colporafianterior

•Stress ve urge incontinence formation:

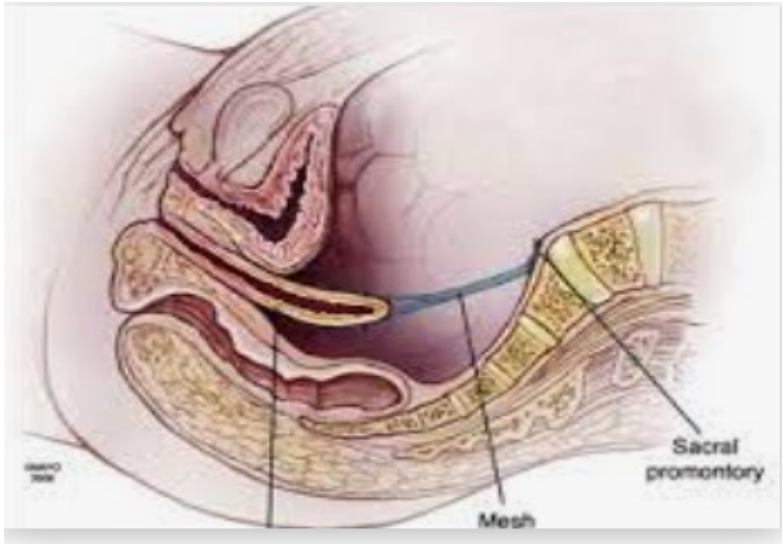
– Damage to neurons during vaginal dissections
–Changes in the vesicourethral junction
– Flattening of the urethra
– Significant decrease in urethral closure pressure

• Dyspareunia and Pelvic Pain



HolleyRL,JAmCollSurg.1995
ShullBL,AmJObstetGynecol.1992
BrummenHJ,IntUrogynecolJPelvicFloorDysfunct.2003
ArbelR,BestPractResClinObstetGynaecol.2005

LPSC vs SSLP



- **Sacrocolpopexy** was seen as **the gold standard procedure**
- Sacrocolpopexy (lpt) was found to be superior to SSLP
- However, operation and recovery time is longer and more expensive than SSLP

Murphy AM, Clark CB, Denisenko AA, D'Amico MJ, Vasavada SP. Surgical management of vaginal prolapse:current surgical concepts. Can J Urol. 2021;28(S2):22–26.
Dieter AA. Pelvic Organ Prolapse:Controversies in Surgical Treatment. Obstet Gynecol Clin North Am. 2021;48(3):437–448. doi:10.1016/j.ogc.2021.05.001.

LSSC vs LPSC

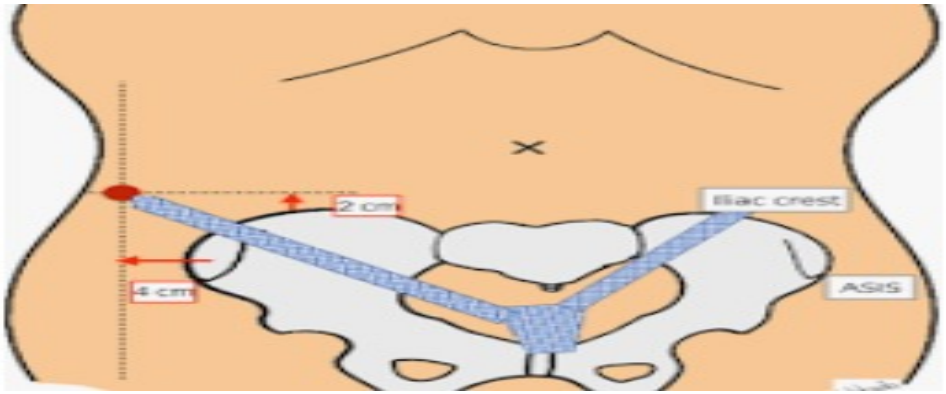
- No difference in laparotomic and laparoscopic approach in sacrocolpopexy in therapeutic effect on apical vaginal prolapse and incidence of recurrence

- However, LSSC is superior to LPSC in terms of blood loss, length of hospital stay, and postoperative ileus risk

Campbell P, Cloney L, Jha S. Abdominal versus laparoscopic sacrocolpopexy: A systematic review and meta-analysis. Obstet Gynecol Surv 2016; 71: 435–442.
De Gouveia De Sa M, Claydon LS, Whitlow B et al. Laparoscopic versus open sacrocolpopexy for treatment of prolapse of the apical segment of the vagina: A systemat review and meta-analysis. Int Urogynecol J. 2016; 27: 3–17.

LLS

Presacral injuries are rare in the LLS procedure described by Dubuisson et al (**1998**), as dissection is not performed at the promontorium or sacral area level



Dubuisson J, Chapron C. Laparoscopic iliac colpo-uterine suspension for the treatment of genital prolapse using two meshes: a new operative laparoscopic approach. J Gynecol Surg. 1998;14(4):153–159.

WHEN SSLP ?

- Old women
- unable to handle long surgical time
- increasing in intra-abdominal pressure is undesirable
- with comorbid disease
- extremely obese

BMI

According to the World Health Organization (WHO),

at least 400 million adults are obese worldwide in 2005

Low S, Chin MC, Deurenberg-Yap M. Review on epidemic of obesity. Ann Acad Med Singap. 2009 Jan;38(1):57-9. PMID: 19221672.

SSLP & BMI

195 patients, Lo et al. 2013

Sacrospinous ligament fixation with anterior mesh repair surgery

Three categories of Asian BMI

- normal weight 18.5 to 23.0 kg/m(2),
- overweight >23.0 to 27.5 kg/m(2),
- and obese ≥ 27.5 kg/m(2)

All categories improved significantly with regard to anatomical outcome, UDI-6, IIQ-7, POPDI-6, PISQ-12 after primary surgery ($p < 0.05$)

None had recurrence requiring further surgery

However, **obese patients** showed less improvement in POP symptoms and sexual function.

Lo TS, Tan YL, Khanuengkitkong S, Dass AK. Surgical outcomes of anterior trans-obturator mesh and vaginal sacrospinous ligament fixation for severe pelvic organ prolapse in overweight and obese Asian women. Int Urogynecol J. 2013 May;24(5):809-16. doi: 10.1007/s00192-012-1940-7. Epub 2012 Oct 24. PMID: 23093321.

In our study

Body mass index (BMI) **below 30 (group 1, non-obese)**
above 30 (group 2, obese)

- The mean age
- POP-Q stage for apical, posterior and anterior
- The duration of surgery
- The mean hospital stay
- Delta hemoglobin
- Postoperative complications

which was statistically similar ($p>0.05$)

CONCLUSION

SSLP is a surgical procedure that is preferred with the vaginal approach in apical prolapse

and requires surgical skill,

However, this study showed that it is safe to perform SSLP in obese cases as well as in non-obese cases.

THANKS…