ACIBADEM
ÜNİVERSİTESİ

Robotik Myomektomi

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Acıbadem Maslak Hastanesi

Neden Robotik Cerrahi?

- Robotik cerrahi, minimal-invaziv cerrahi prosedürlerin **sınırlamalarının üstesinden gelmek** ve açık cerrahi yapan cerrahların yeteneklerini geliştirmek için geliştirilmiştir:
  - 3-boyutlu görüntü
  - Enstrümanların ucunun hareket kabiliyeti
  - Titreme olmadan cerrahın hareketlerinin dokuya aktarılması

Dezavantajları

- Her sistemde dokunma hissi yok → öğrenme eğrisi uzamakta
- Büyük yer kaplayan sistemler ve hastaya ulaşım zor
- Pahalı

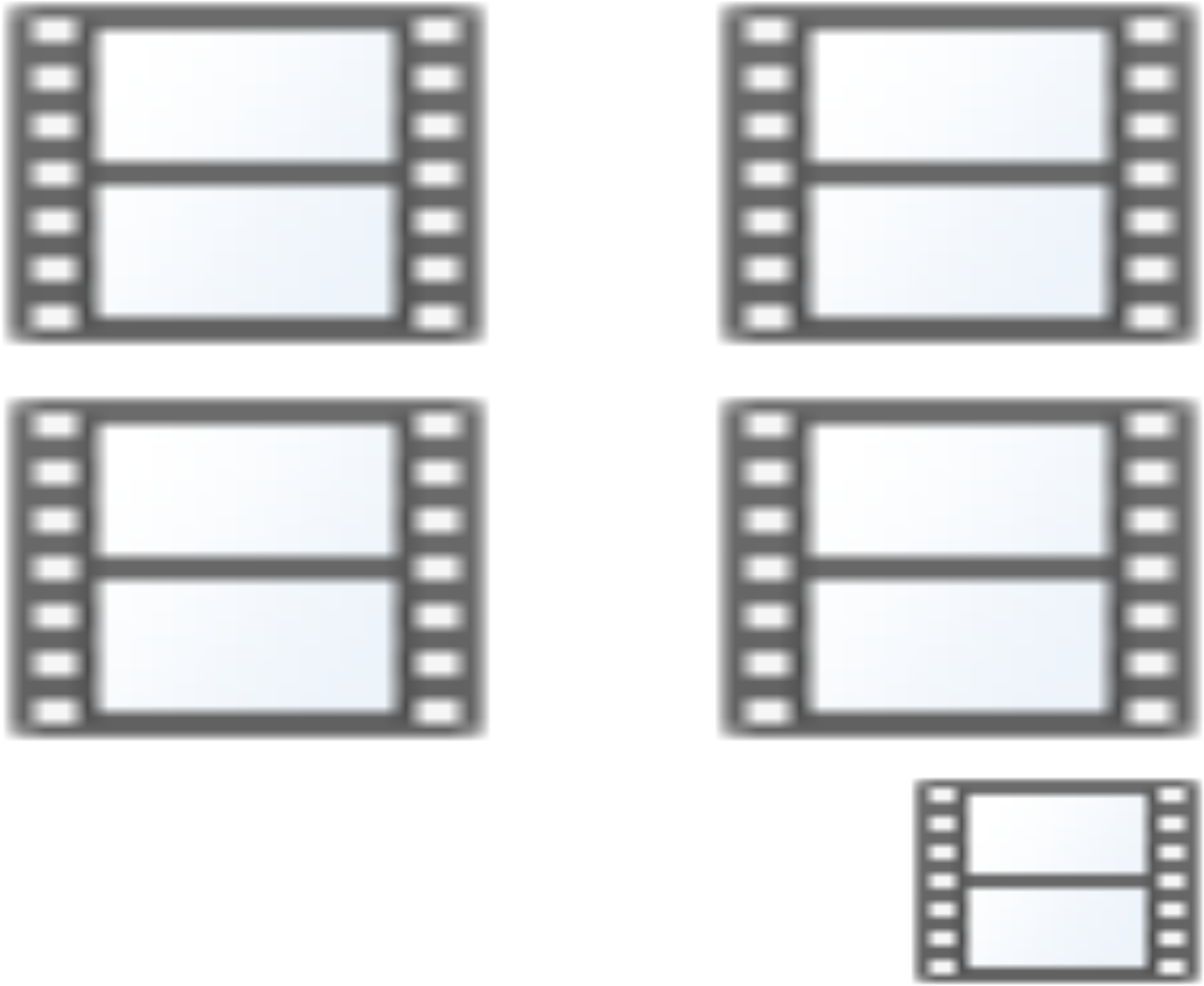
Robot-asiste Cerrahi Tarihçe

- İlk cerrahi robot – Arthrobot (1984)
- İlk laparoskopik kamera tutucu – AESOP (1994)
- Jinekolojide ilk robot kullanımı – Cleveland Clinic (1999)
- FDA onayı alan ilk operatif cerrahi robot – da Vinci (2000)
- İlk AI tabanlı doktor gözetiminde ancak yardımsız robotik cerrahi (2006)
- Dokunma hissini ilk sunan robot – Sofie (2010)
- Oturur veya ayakta cerrahi işlem yapabilen ilk robotik sistem - Versius (2019)

Robotik Cerrahi Sistemleri

Company	Robotic system(s)
Intuitive Surgical	Da Vinci Xi, Da Vinci X, Da Vinci SP, Ion
Medtronic	Hugo
Johnson & Johnson	Monarch, Velys, Ottava
Stryker	Mako
Siemens Healthineers' Corindus	CorPath GRX
Vicarious Surgical	Beta 2
Titan Medical	Enos
Asensus Surgical	Senhance

Company	Robotic system(s)
Moon Surgical	Maestro
Momentus Surgical	Anovo
Virtual Incision	MIRA
Stereotaxis	Genesis RMN, Vdrive, Niobe
Monteris Medical	NeuroBlate
Zimmer Biomet	Rosa
Smith+Nephew	Cori
EndoQuest	ELS



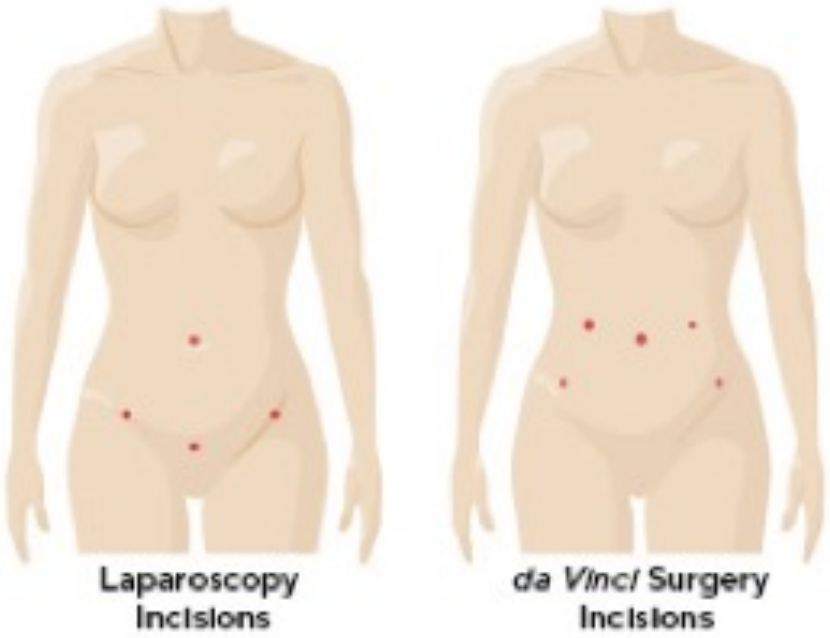
Robotik Sistem

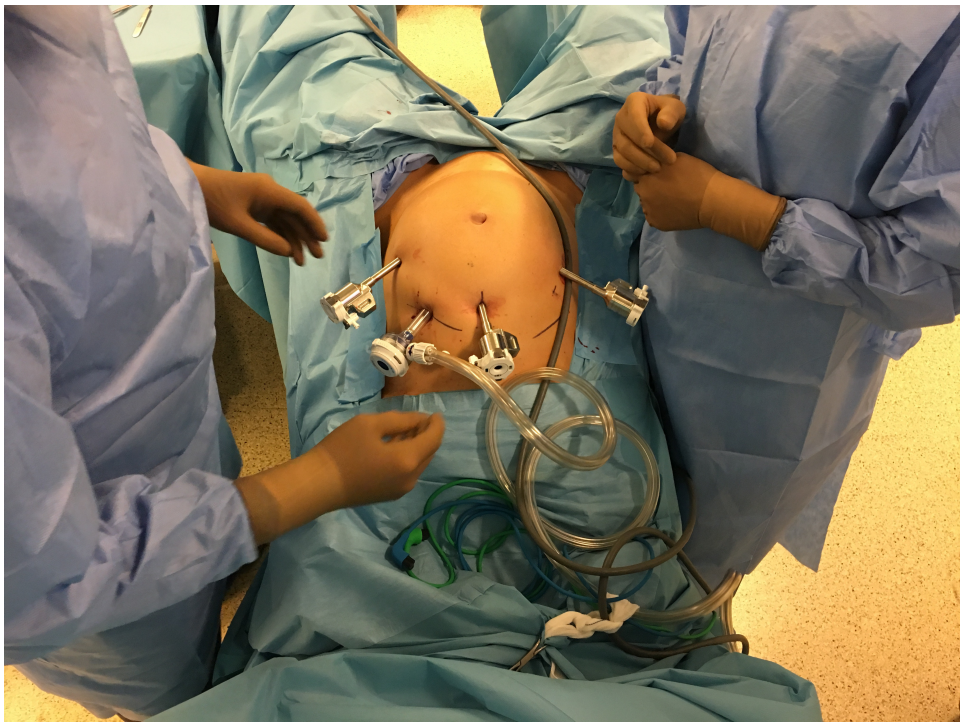
da Vinci Si·e SURGICAL SYSTEM

da Vinci Xi SURGICAL SYSTEM

The Next Frontier for Minimally Invasive Surgery

Trokar Girişleri





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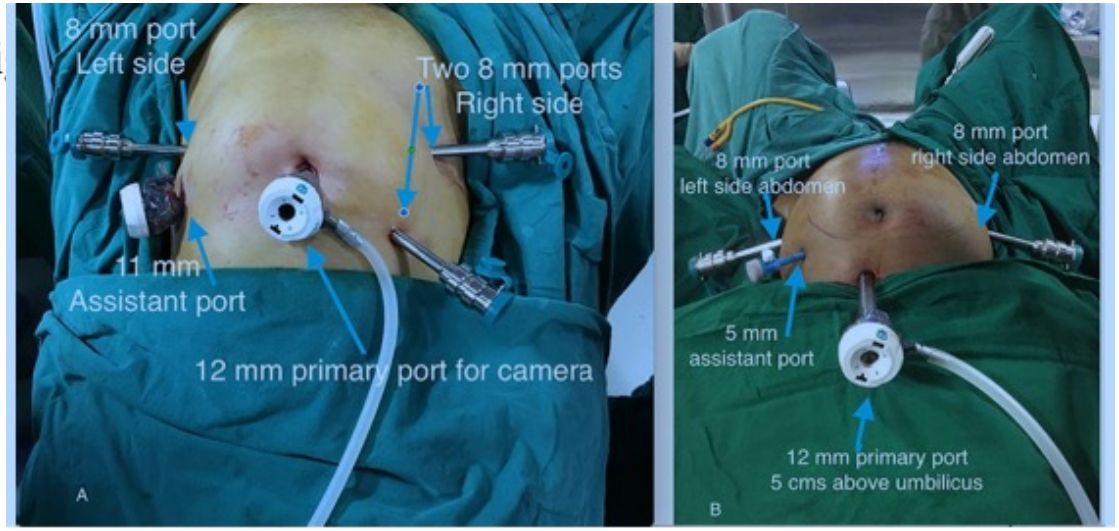
https://doi.org/10.1007/s13224-021-01553-3

INSTRUMENTATION AND TECHNIQUES

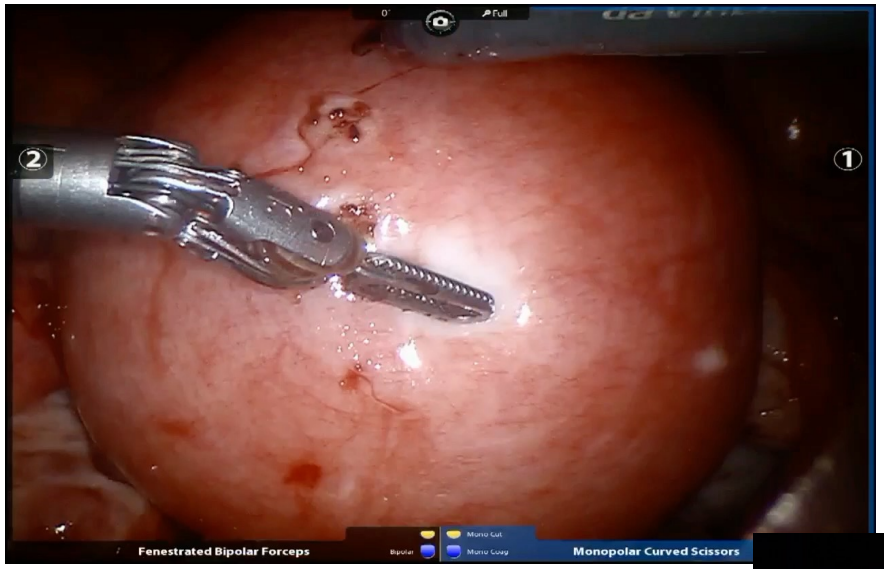
Robotic Myomectomy: Five Modifications in Our Practice

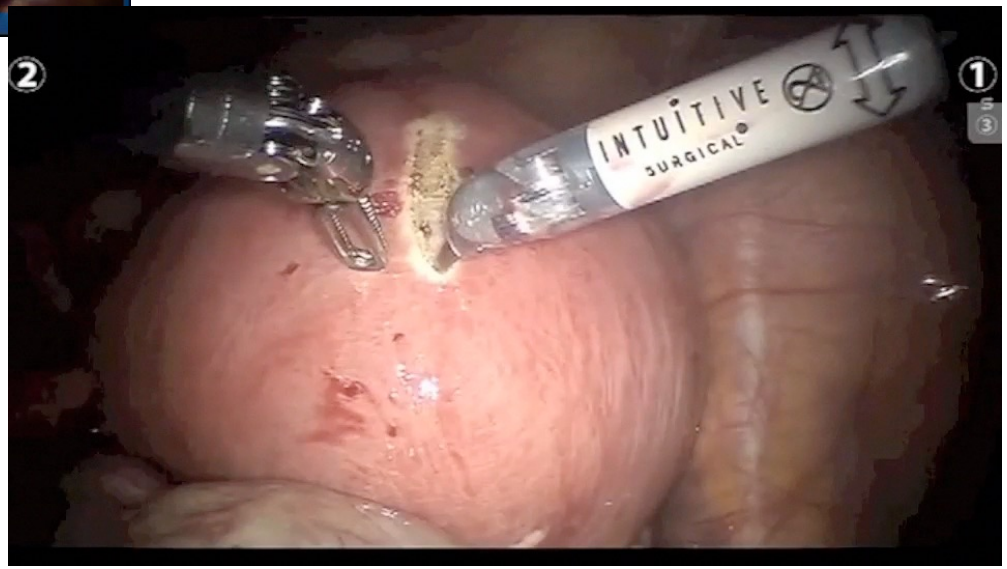
Rooma Sinha[1] · **Bana Rupa**[2]

1. Preoperative MRI
2. Modified Port placement
3. Reduction in number of robotic instruments used during surgery
4. Effective and efficient suturing -Barbed suture (30 or 45 cms)
5. Cold knife morcellation and indi

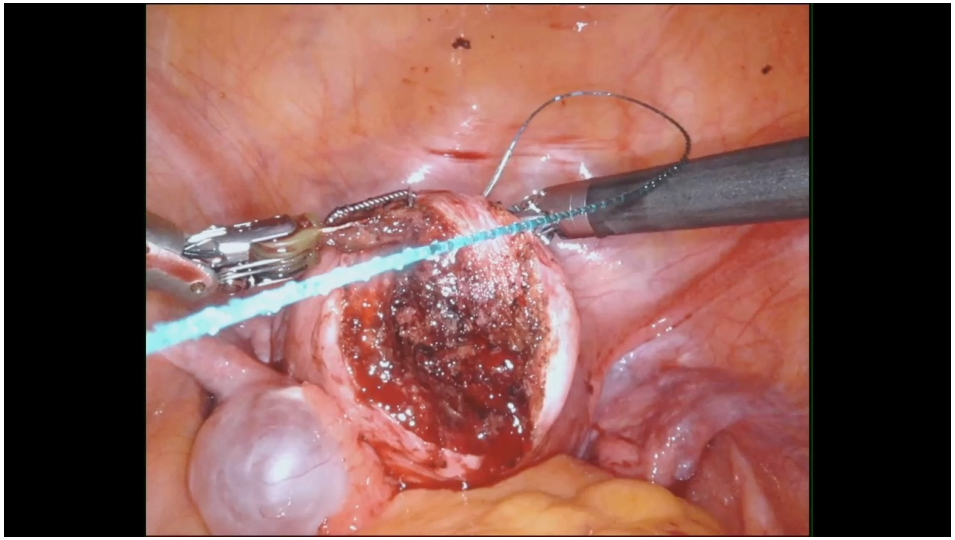


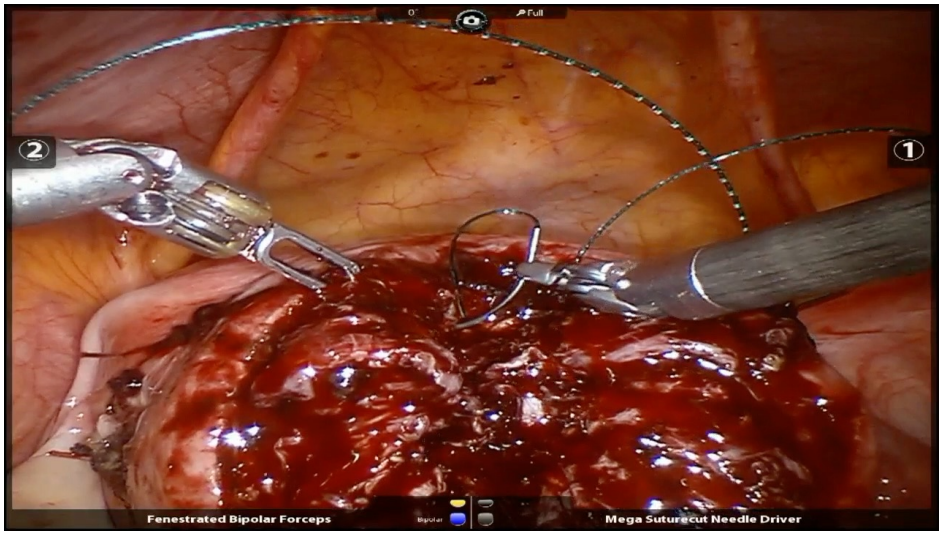
Uterin İnsizyon ve Enükleasyon



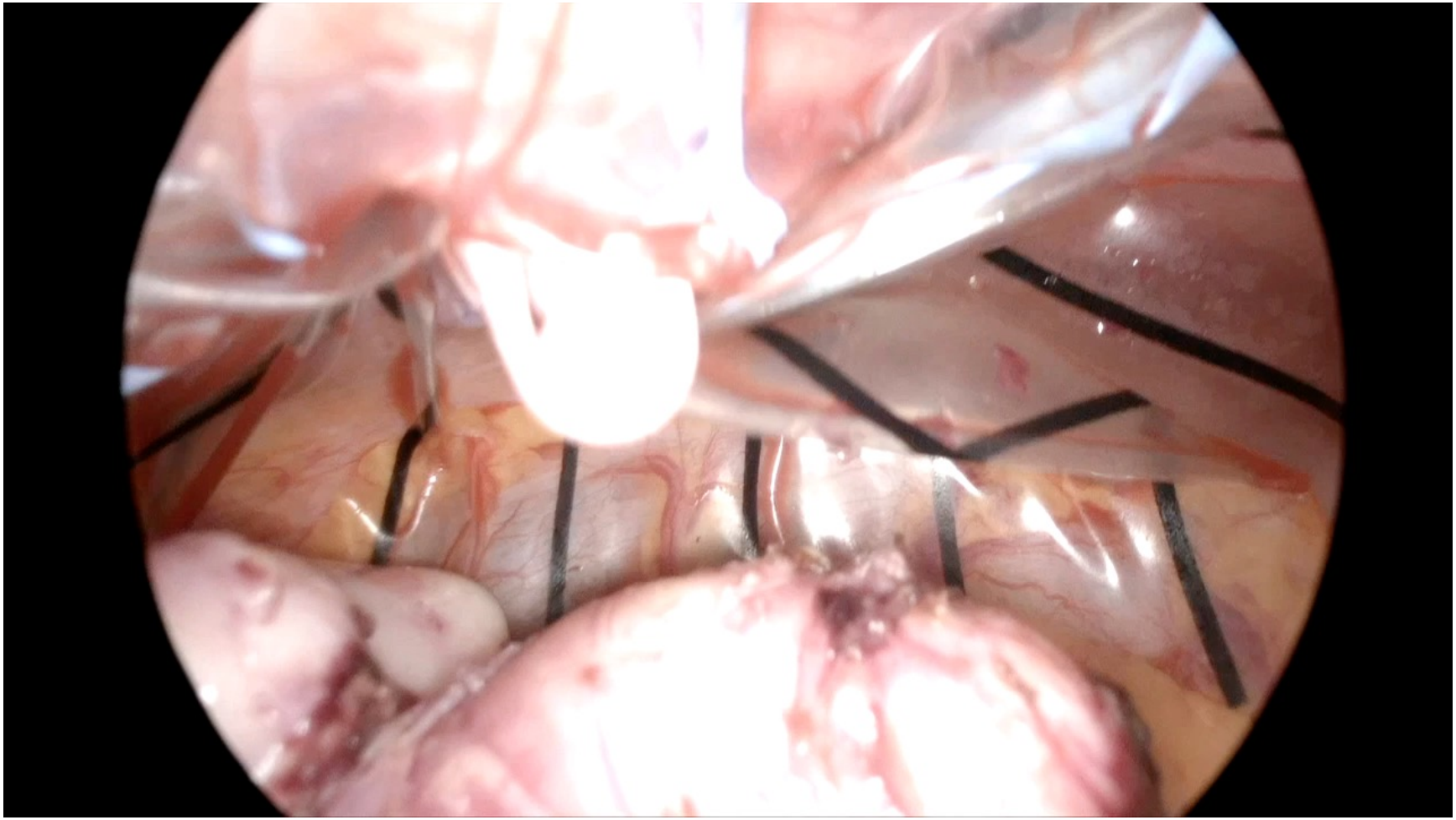


Sütürasyon




Full
2
1
Fenestrated Bipolar Forceps
Mega Suturecut Needle Driver

Myomun Batın Dışına Çıkarılması



Review > Arch Gynecol Obstet. 2016 Jul;294(1):5-17. doi: 10.1007/s00404-016-4061-6.
Epub 2016 Mar 11.

Robotic assisted vs laparoscopic and/or open myomectomy: systematic review and meta-analysis of the clinical evidence

Christos Iavazzo [1 2], Ioannis Mamais [3], Ioannis D Gkegkes [4]

Conclusion: Regarding the comparison between robotic assisted and laparoscopic technique, no significant difference was found between the two in comparison groups. Minimally invasive

Review > Cochrane Database Syst Rev. 2012 Feb 15;(2):CD008978.
doi: 10.1002/14651858.CD008978.pub2.

Robotic surgery for benign gynaecological disease

Hongqian Liu [1], DongHao Lu, Lei Wang, Gang Shi, Huan Song, Jane Clarke

published in conference proceedings, limited usable data were available for further analysis. The only analysis in this trial showed comparable rates of conversions to open surgery between the robotic group and the laparoscopic group (OR 1.41, 95% CI 0.22 to 9.01; P = 0.72). One RCT showed longer operation time (MD 66.00, 95% CI 40.93 to 91.07; P < 0.00001), higher cost (MD 1936.00, 95% CI 445.69 to 3426.31; P = 0.01) in the robotic group compared with the laparoscopic group. Also, both studies reported that robotic and laparoscopic surgery seemed comparable regarding intraoperative outcome, complications, length of hospital stay and quality of life.

Original Article

Comparison of cesarean delivery outcome after robotic and laparoscopic myomectomy

Seyeon Won [a, 1], Su Hyeon Choi [a, 1], Su Jin Kim [a], Nara Lee [a], So Hyun Shim [a], Miseon Kim [a], Mi Kyoung Kim [a], Yong Wook Jung [a], Bo Seong Yun [b], Seok Ju Seong [a], Mi-La Kim [a, *]

Table 4
Pregnancy complications in women at cesarean section.

Parameter	LM (n = 222)	RM (n = 51)	*p*-value
Admission due			
Compression s			
Postpartum he			
Pregnancy-indu			
Premature rupt			
Intrauterine fet			
Uterine defects			
Uterine rupture			
Placenta previa			
Placenta accret			
Placenta abrupt			

Table 5
Data on uterine rupture.

Case	1
Age at rupture	31
Type of surgery	LM
Myoma character	1 cm SS-IM fundus
Uterine incision	monopolar
Endometrium exposure	no
Type of suture	Interrupted suture
Interval from surgery to pregnancy	4 months
Rupture, GA week	IUP 34 + 1
Fetal survival	No
Maternal survival	Yes

> J Minim Invasive Gynecol. 2019 Sep-Oct;26(6):1095-1103. doi: 10.1016/j.jmig.2018.10.022. Epub 2018 Nov 2.

Perioperative Outcomes of Myomectomy for Extreme Myoma Burden: Comparison of Surgical Approaches

L Joya Jansen [1], Nisse V Clark [1], Monalisa Dmello [1], Xiangmei Gu [1], Jon I Einarsson [1], Sarah L Cohen [2]

Conclusion: Myomectomy for extreme myomas is feasible using an abdominal, laparoscopic, or robotic approach. Increased myoma burden is associated with an increased risk of perioperative complications. A threshold of 13 myomas was associated with an almost 2-fold higher risk of perioperative complications for all modes. Perioperative complication outcomes were more favorable in AM or LM over RM with increased myoma weight and AM over LM or RM with increased myoma number.

Sonuç

- Robotik cerrahi, laparoskopi engeline takılmadan minimal invaziv cerrahi uygulamak isteyen abdominal cerrahlar için uygun ancak günümüzde pahalı ve hantal bir seçenektir.
- Henüz yolun başındayız ancak robot teknolojisi hızla SP ve AI uygulamalarına yönelmektedir.
- Laparoskopik myomektomi (LM) ve robotik myomektomi (RM) perioperatif ve erken dönem post-operatif klinik sonuçları benzerdir.
- RM'nin uzun vadede fertilite üzerine etkileri henüz belirsizdir.
- Ticari rekabet, SP ve NOS için sistemlerin modifiye edilmesi ve AI tabanlı hekim gözetiminde bağımsız sistemlerin gelişimi ile gelecekte robotik cerrahi daha sık uygulanacaktır.

SABRINIZ
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TEŞEKKÜRLER

A comparison between reduced-port robotic surgery and multiport robot-assisted laparoscopy for myomectomy

Su Hyun Nam[a,1], Jiheum Paek[b,1], Chahien Choi[a], Se Hyun Nam[a], Woo Young Kim[a,*]

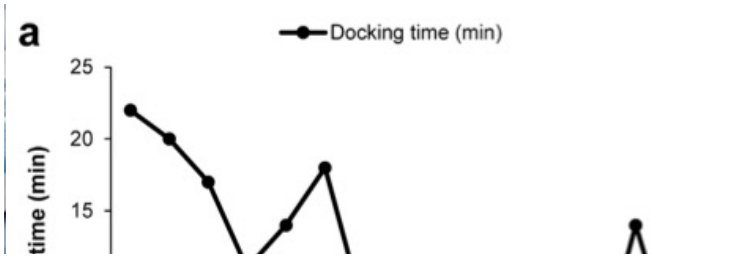
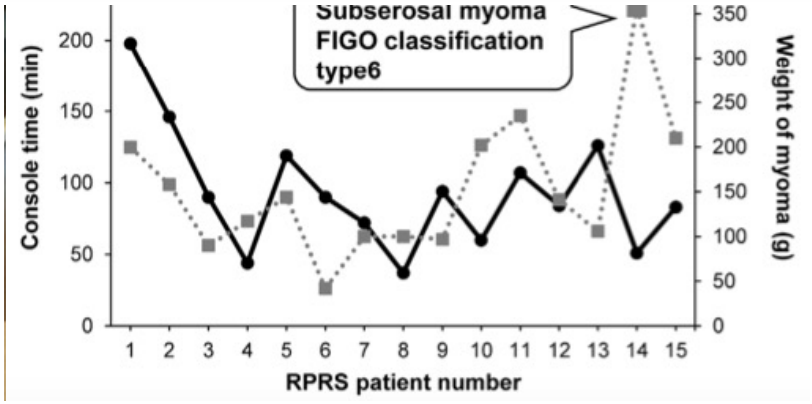


Table 2
Operative outcomes from RPRS myomectomy and conventional robotic myomectomy.

	RPRS group ($n = 15$)	Multiport group ($n = 15$)	p value
Docking time (min)	11.6 ± 5.6 (4–22)	9.4 ± 6.1 (5–20)	0.316
Console time (min)	93.4 ± 42.1 (37–198)	93.6 ± 29.6 (37–170)	0.984
Conversion, n (%)	2 (13.3)	N/A	
Hospital stay (day)	3.2 ± 0.6 (3–5)	3.0 ± 0.8 (2–5)	0.451
Estimated blood loss (ml)	155.3 ± 114.0 (50–500)	144.0 ± 127.4 (10–500)	0.799
Hb change (mg/dL)	2.2 ± 0.9 (0.1–3.5)	2.0 ± 0.8 (0.1–2.9)	0.425
Count of myomas	4.5 ± 3.0 (1–10)	3.2 ± 2.4 (1–8)	0.218
Weight of myomas (g)	153.3 ± 77.9 (42–357)	180.5 ± 58.7 (79–253)	0.290



Article

Comparison of Surgical Outcomes between Single-Port Laparoscopic Surgery and Da Vinci Single-Port Robotic Surgery

Jeong-Min Kim [1,†], Seon-Mi Lee [1,†], Aeran Seol [1], Jae-Yun Song [1,*], Ki-Jin Ryu [1], Sanghoon Lee [1], Hyun-Tae Park [1], Hyun-Woong Cho [2], Kyung-Jin Min [3], Jin-Hwa Hong [2], Jae-Kwan Lee [2] and Nak-Woo Lee [3]

Table 2. Surgical outcomes of SPLH, SPRH, SPLC, SPRC, SPLM, and SPRM.

	SPLH (n = 148)	SPRH (n = 35)	p-Value	SPLC (n = 207)	SPRC (n = 108)	p-Value	SPLM (n = 12)	SPRM (n = 56)	p-Value
Surgical time (minutes)	128.69 ± 50.49	114.71 ± 44.20	0.134	92.10 ± 55.06	81.90 ± 45.07	0.098	160.42 ± 61.62	134.55 ± 63.39	0.202
Docking time (minutes)	-	3.66 ± 1.37	N/A	-	3.59 ± 2.08	N/A	-	3.48 ± 1.98	N/A
Postperative Hb change (g/Dl)	1.5 ± 1.13	1.53 ± 1.04	0.892	1.88 ± 1.03	1.59 ± 1.08	0.023	2.85 ± 1.62	1.75 ± 1.20	0.010
Hospital stay (days)	4.55 ± 1.26	4.54 ± 1.01	0.985	4.37 ± 0.96	4.55 ± 1.86	0.262	5.17 ± 2.65	4.57 ± 1.12	0.461
Intraoperative complication									
No	148 (100.0%)	35 (100.0%)		207 (100.0%)	108 (100.0%)		12 (100.0%)	56 (100.0%)	
Yes	0 (0.0%)	0 (0.0%)		0 (0.0%)	0 (0.0%)		0 (0.0%)	0 (0.0%)	
Postoperative complication			1.000						
No	146 (98.6%)	35 (100.0%)		207 (0.0%)	108 (100.0%)		12 (100.0%)	56 (100.0%)	
Yes	2 (1.4%)	0 (0.0%)		0 (0.0%)	0 (0.0%)		0 (0.0%)	0 (0.0%)	
Conversion to laparotomy									
No	148 (100.0%)	35 (100.0%)		207 (100.0%)	108 (100.0%)		12 (100.0%)	56 (100.0%)	
Yes	0 (0.0%)	0 (0.0%)		0 (0.0%)	0 (0.0%)		0 (0.0%)	0 (0.0%)	
Adhesiolysis			0.084			0.136			0.136
No	121 (81.8%)	24 (68.4%)		151 (72.9%)	87 (80.6%)		9 (91.7%)	42 (94.6%)	
Yes	27 (18.2%)	11 (31.6%)		56 (27.1%)	21 (19.4%)		3 (27.1%)	4 (19.4%)	
Postoperative transfusion			1.000			1.000			1.000
No	146 (98.6%)	35 (100.0%)		206 (99.5%)	107 (99.1%)		11 (99.5%)	55 (99.1%)	
Yes	2 (1.4%)	0 (0.0%)		1 (0.5%)	1 (0.9%)		1 (0.5%)	1 (0.9%)	