

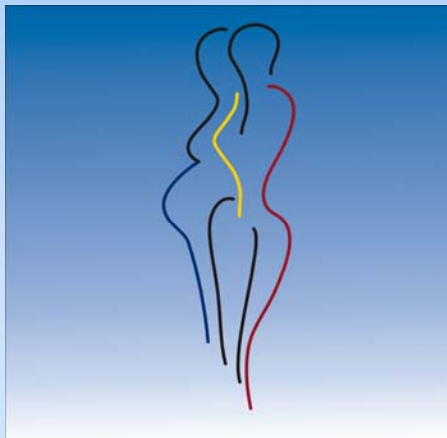
# Laparoscopic assisted creation of neovagina

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**S. Brucker  
D. Wallwiener**

Frauenklinik

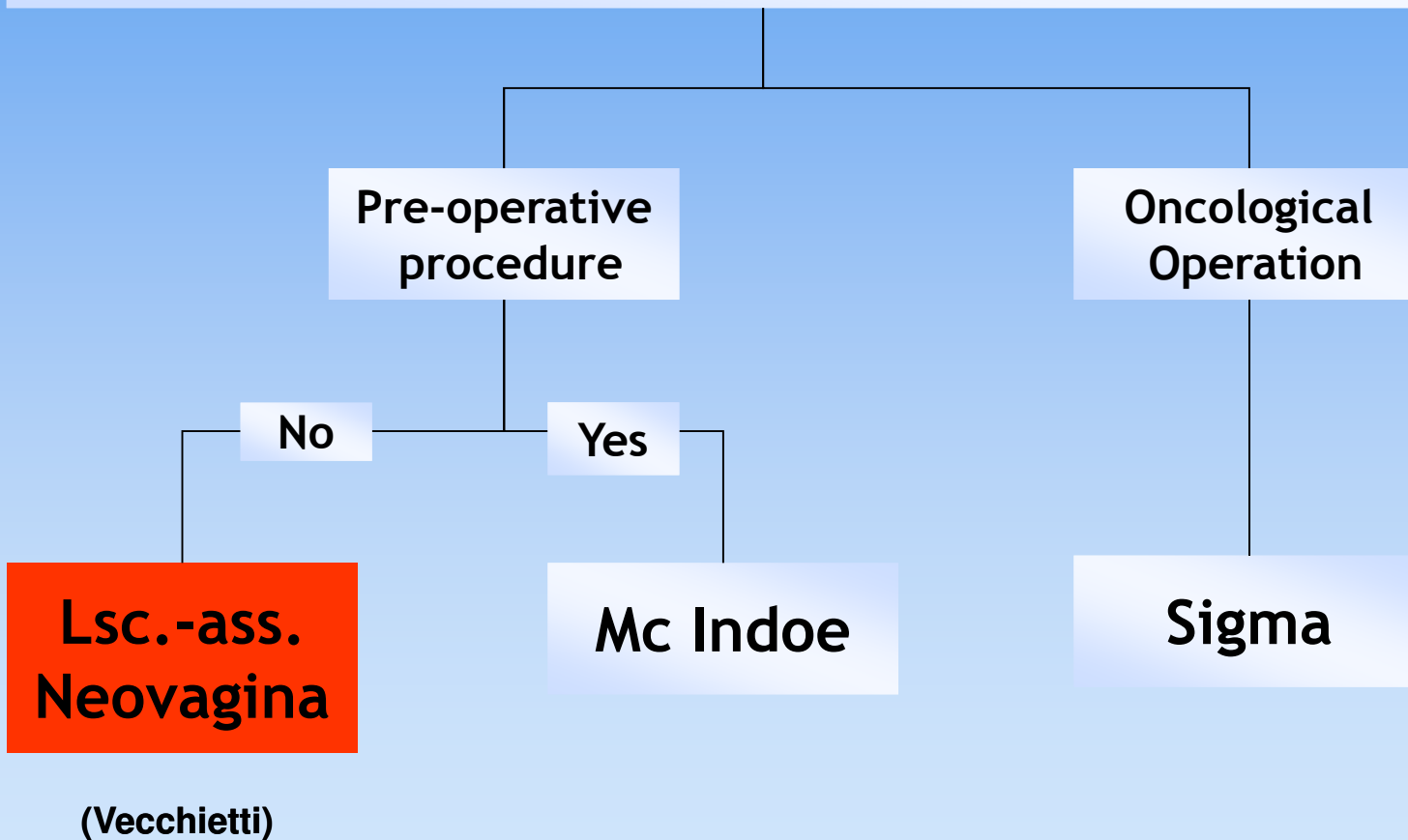
Universitäts-



Tübingen

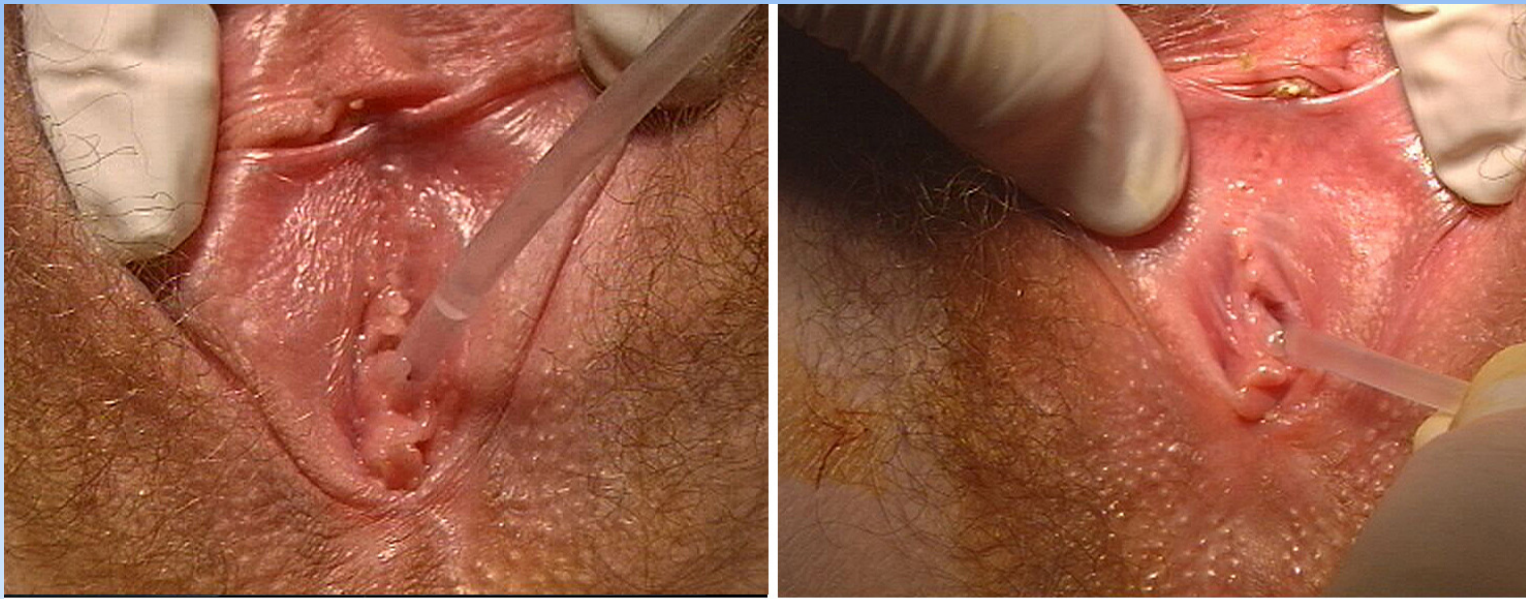
# Management of vaginal agenesis (Tübingen)

## Vaginal agenesis



# Congenital Vaginal Agenesis

- **Mayer - Rokitansky - Küster - Hauser – Syndrom** (Incidence 1: 4000 -5000)
- **AIS = Androgen Insensitivity Syndrom** (Incidence 1: 25000)



# Laparoscopic neovagina (peritoneum)

Davydov

Studies	Patients	Follow-up	Length neovagina	complications
2 studies	28 each	1- 8 years	7-8 cm	Intra-operative bladder and ureteric injury (n=4) abdominal migration of the mould (n=2) vesico-vaginal fistula (n=3) Need for re-operation (n=4): incision, dilation
1 study	12		8-10 cm	n.a.
1 study	30	6-44 mo (mean30)	7-8 cm	Intraoperative: None, urinary retention after catheter removal (n=5)
1 prospective study	31	12 months	6,27 cm (mean)	n.a.

**Disadvantages:**

Shrinking: time-life need for dilators, no lubrication: need for lubricans, fistula, prolaps, cancer, blood loss,, longer operation time ( 2-3 times compared with Vecchietti), shorter length of neovagina

**Advantages:**

Short hospital stay, no particular instrumentation required, relative simplicity

**Indication:**

MRKH-syndrome

Dargent D, et al: Gynecol Obstet Fertil. 2004 Dec;32(12):1023-3  
 Ma Y J Plast Reconstr Aesthet Surg. 2009 Mar;62(3):326-30.  
 Fedele L, Am J Obstet Gynecol. 2009;201  
 Liu X, J Minim Invasive Gynecol. 2009 Nov-Dec; 16(6): 720-9

# Laparoscopic neovagina (Bowl)

Studies	Patients	Follow-up	Length neovagina	complications
1 case report: colon neovagina following radical HE with subtotal colpectomy and radiotherapy	1 (43 y)	12 months	n.a.	Stenosis introitus → incision
1 prosp. study	7	31 months (mean)	7-15 cm	Vulvar haematoma
1 retrospective study	26	3-46 months	10-15 cm	Dilation introitus (n=2) Blood transfusion (n=1) Infection, abscess (n=3)
<b><u>Disadvantages:</u></b> Smelling lubrication, Dyspareunia, Colitis, severe complications until death, big operative-technical deal Prolaps (n=5), Cancer (n=5), Necrosis (n=4), Colitis (n=6), Anastomosis insufficiency and death (n=1)				
<b><u>Advantages:</u></b> Only little shrinking tendency, good lubricance, no need for post-operative phantomes				
<b><u>Indication:</u></b> Patients with major oncological surgeries				

Possover M., et al: Surg Endosc. 2001 Jun;15(6):623  
 Darai E. Hum Reprod. 2003 Nov;18(11):2454-9  
 Cai B, BJOG 2007; 114:486-1492

# Laparoscopic neovagina

## Modified Vecchietti

Studies	Patients	Follow-up	Length neovagina	complications
1 study	110	>= 12 months	>=6 cm	Intra-operative bladder injury (n=4) Perforation of rectal wall (n=2) Unsuccessful operation (n=3)
1 study	86	>= 12 months	6-9cm (mean 7,5)	none

**Disadvantages:**

Postoperative need for dilatation (> 6 months)

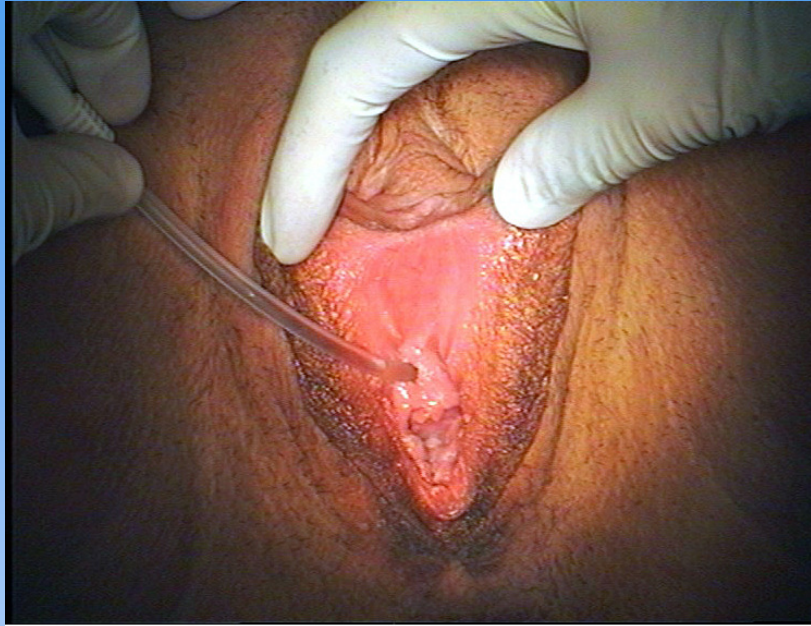
**Advantages:**

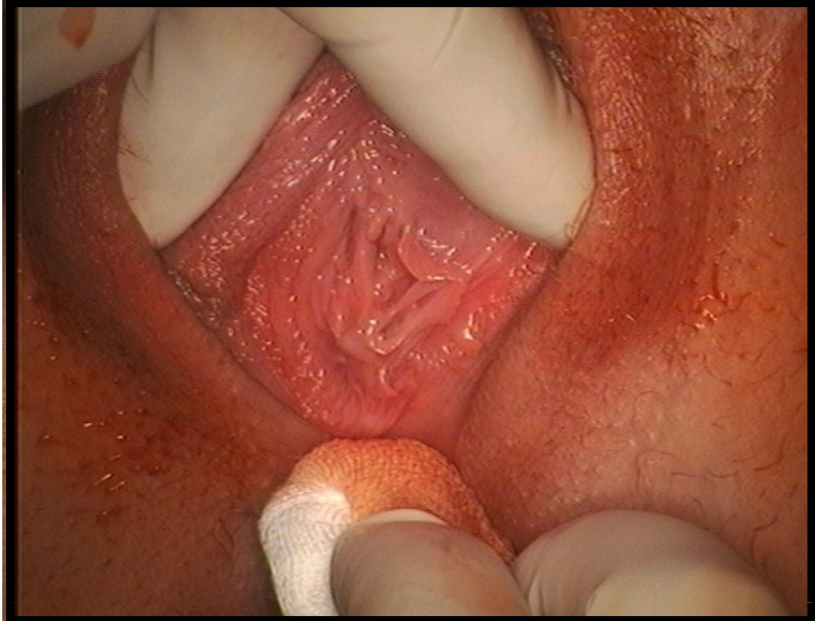
small surgical trauma, no severe complication, very high success rates, normal mucosa, good lubrication  
no prolapse, short period of postoperative tension, small surgical trauma, no severe complication

**Indication:**

MRKH-syndrome

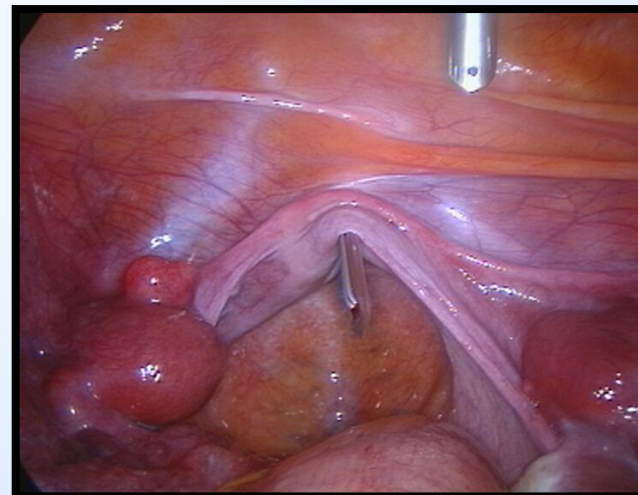
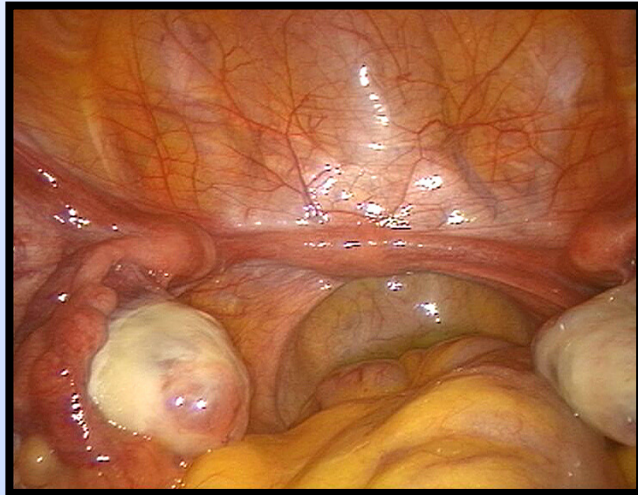
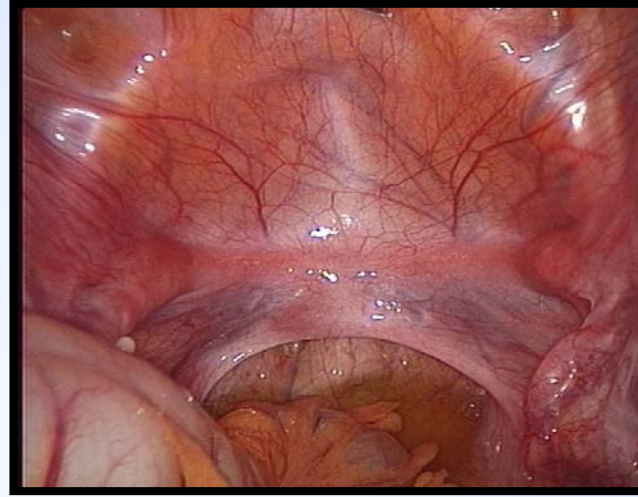
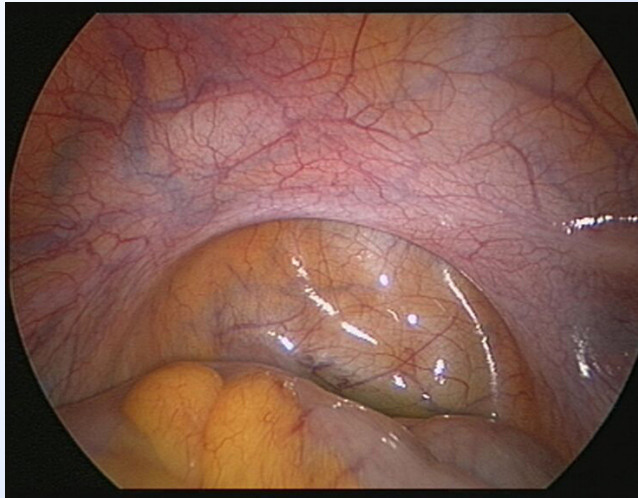
Fedele L. et al Am J Obstet Gynecol 2008;198: 377.e1  
Borruto F, Internat. J Gynecol Obstet 2007,98,15-19

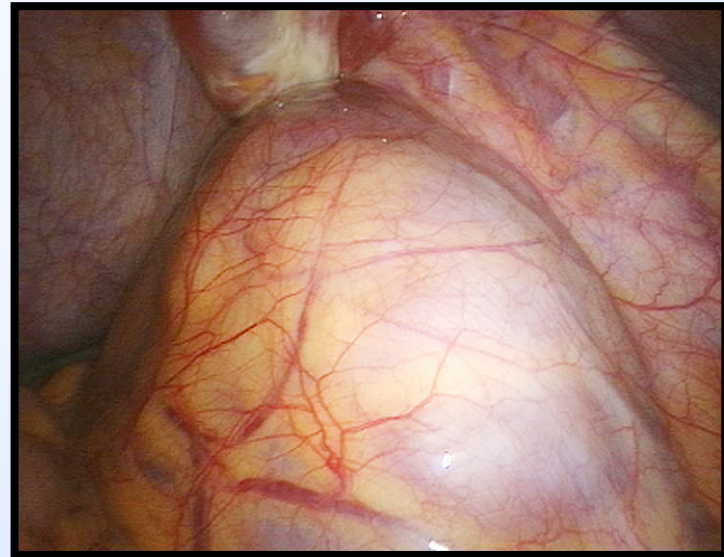
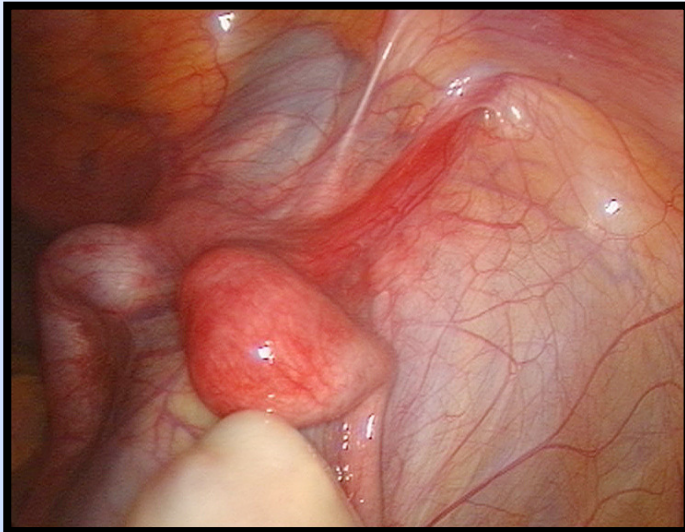
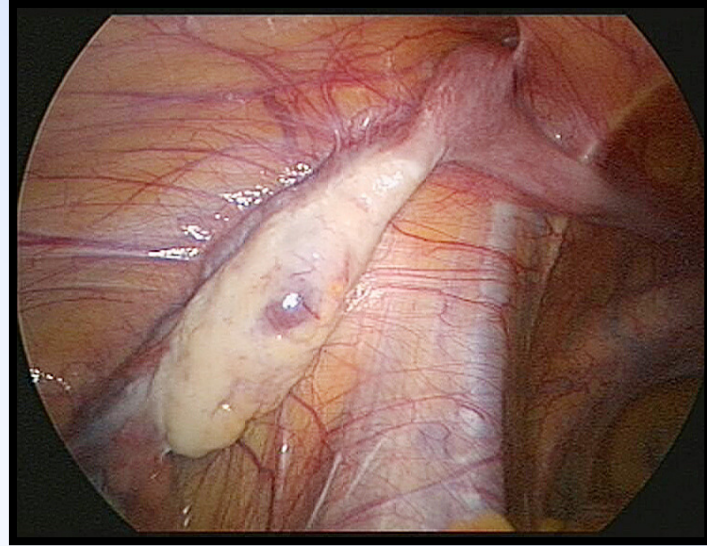
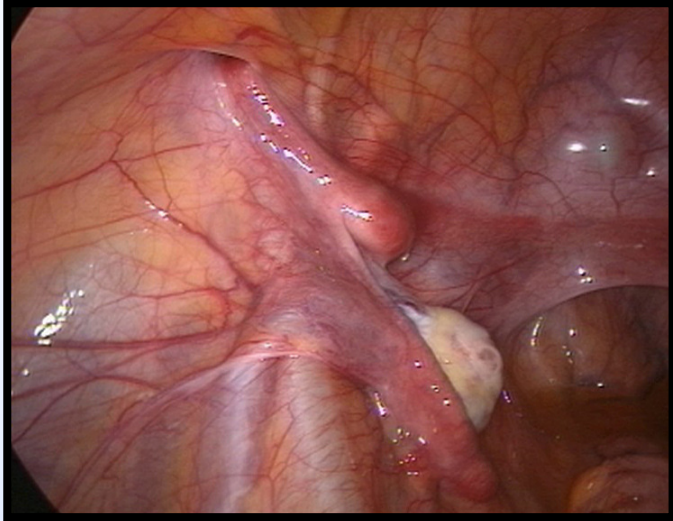






# Laparoskopie bei MRKH





# **Mayer-Rokitansky-Küster-Hauser-Syndrom**

*(Incidence 1: 4000 -5000)*

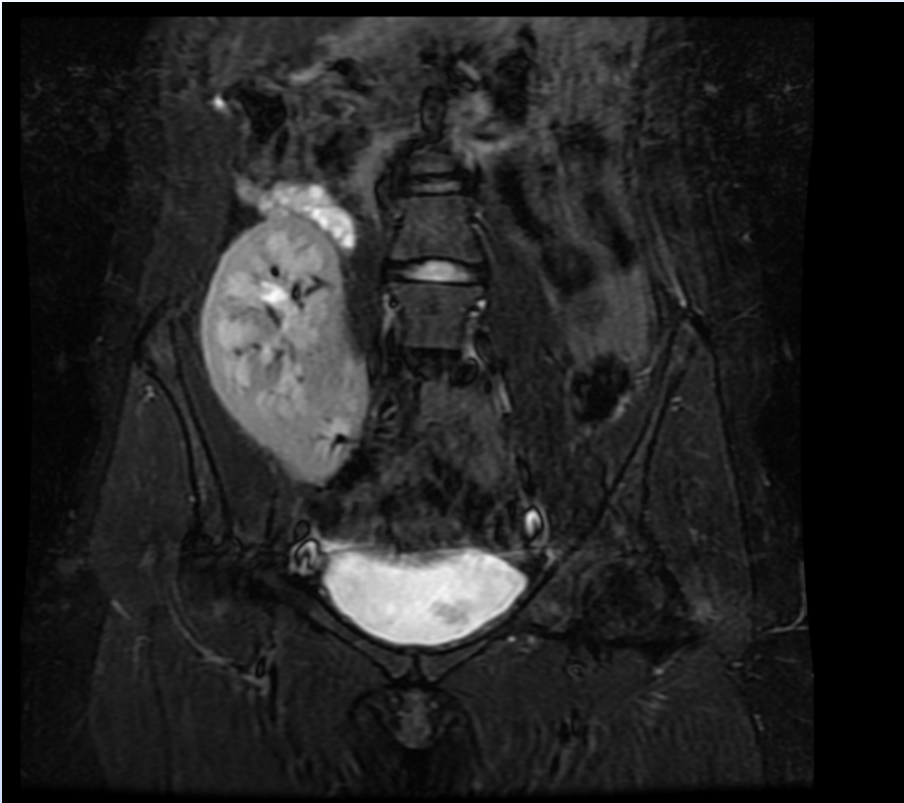
## **Diagnostic:**

- **History**
- **ultrasound of vaginal vestibule (rectum)**
- **digitale palpation (vaginal, rectal)**
- **Chromosome analysis**
- **Hormon status**
- **Uro-MRI**
- **diag. LSC**

## Patient 1: URO-MRI



## Patient 2: URO-MRI



## Malpractice (n=163)

### Extragenitale Fehlbildungen bei Patientinnen mit MRKH-Syndrom der UFK Tübingen

#### Assoziierte Fehlbildungen (n = 163)

#### Häufigkeit\*

<b>1. Malformationen der Niere und ableitenden Harnwege:</b>	<b>29,4 %</b>
– Beckennieren	9,8 %
– einseitige Nierenaplasie	8,6 %
– solitäre Hufeisen-Beckenniere mit Harnblasenasymmetrie	2 %
– Doppelnieren	0,6 %
– einseitige Ektasien des Nierenbeckenkelchsystems	5,2 %
– Malrotation einer Niere	2,2 %
– vesikourethraler Reflux II °	0,5 %
– einseitig atrophische Zystenniere mit Hydroureter	0,5 %
<b>2. skelettale Fehlbildungen**:</b>	<b>20,1 %</b>
– Skoliose	5,1 %
– Hüft dysplasien	8 %
– Daumenfehlbildung	2 %
– multiple Fehlbildungen	3 %
– Klippel-Feil-Syndrom	2 %

Hymen atresia	15,4%
(Hymen incision	8 %)
Ovarian insufficiency	25,5%
<b>TOTAL</b>	<b>40,9 %</b>

3 „A“: asymptomatic, amenorrhoe, aplasia

**Laparoscopic-assisted Neovagina:  
Optimizing due to new traction device and  
vagino-abdominale Perforation without dissection of vesico-rectale space**

## **Surgical steps**

*Since 1992: by LSC (Wallwiener)*

- **1.laparoscopic step:**  
Recto-vaginale palpation, zystoscopic diaphanoscopy,  
laparoscopic desicion of the perforation point
- **vaginal step:**  
perforation of vaginale membrane without dissection
- **2. laparoscopic step:**  
retroperitonally guidance of threads
- **Fixation of traction device**

ENDOWORLD

GYN 19-E

Laparoscopic-assisted creation  
of a neovagina  
acc. to Brucker, Wallwiener

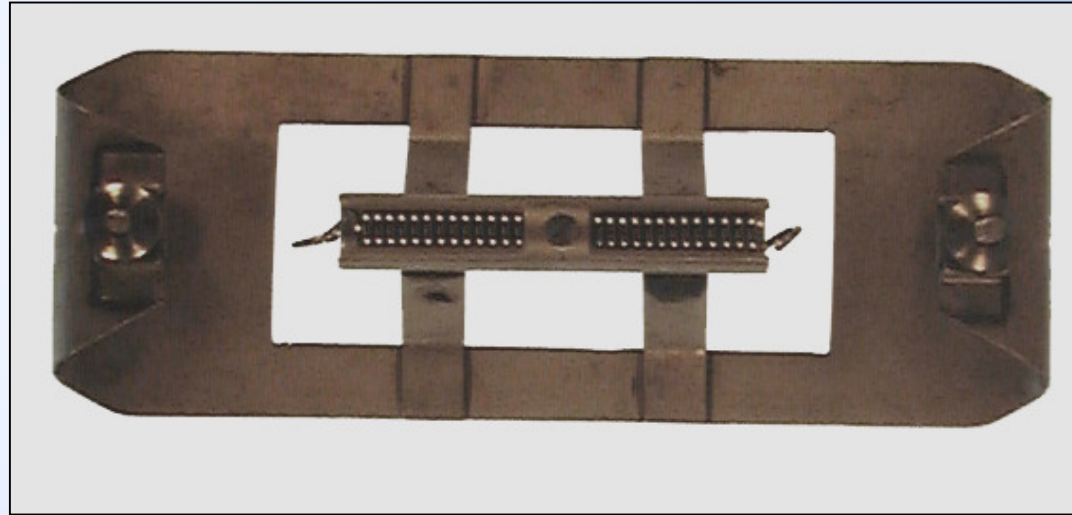


**STORZ**  
KARL STORZ — ENDOSKOPE  
THE DIAMOND STANDARD

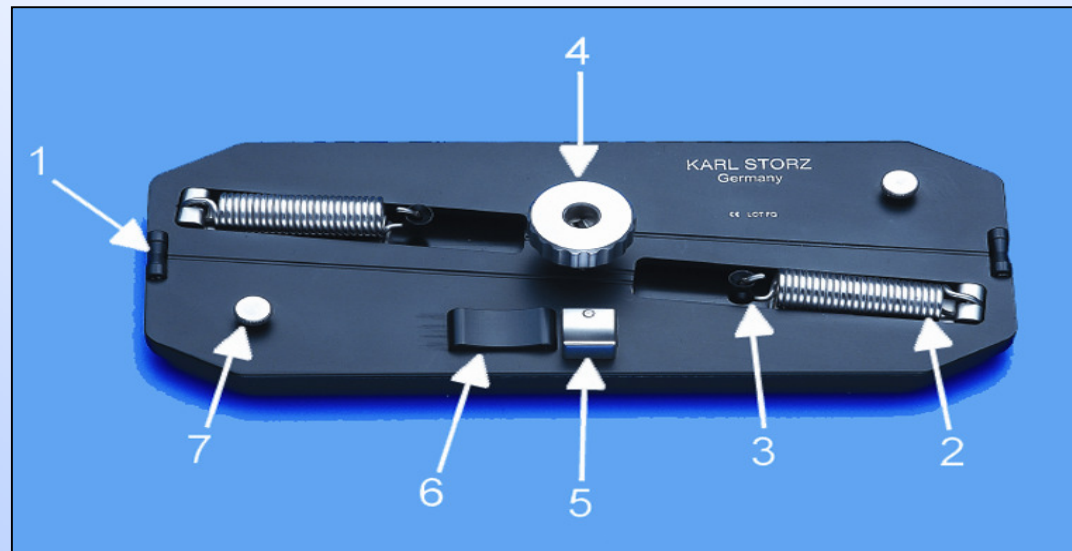


# Traction device

**OLD:**



**NEW:**



# Laparoscopic-assisted Neovagina Application - Instruments

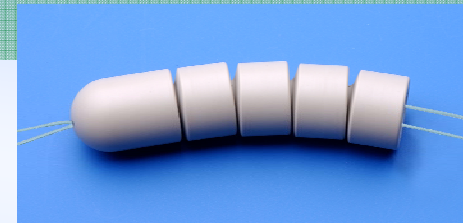
## Thread Guide

- **straight Thread Guide**
  - vagino-abdominale perforation
- **two Curved Thread Guides**
  - peritonealization



## Pluggable segmented dummy

- central hole for flowing off secretion
- determine of the exact length of the neovagina
- suprapubic catheter



## Traction device

- no ripping off of the threads
- stable direction of the tension
- possibility of tighten equally both traction threads
- no unintentional opening
- smooth surface



## Dummies

postoperative dummies, different sizes for individually use  
(length 10 cm or 12 cm; diameter 2; 2,5 and 3 cm)



# Vaginal agenesis - A prospective interventional study in 152 cases using a new laparoscopic Vecchietti-based procedure without vesicorectal tunnelling

vagino- abdominale perforation with vs.non dissection of vesico-rectale space

$n_1 = 12$

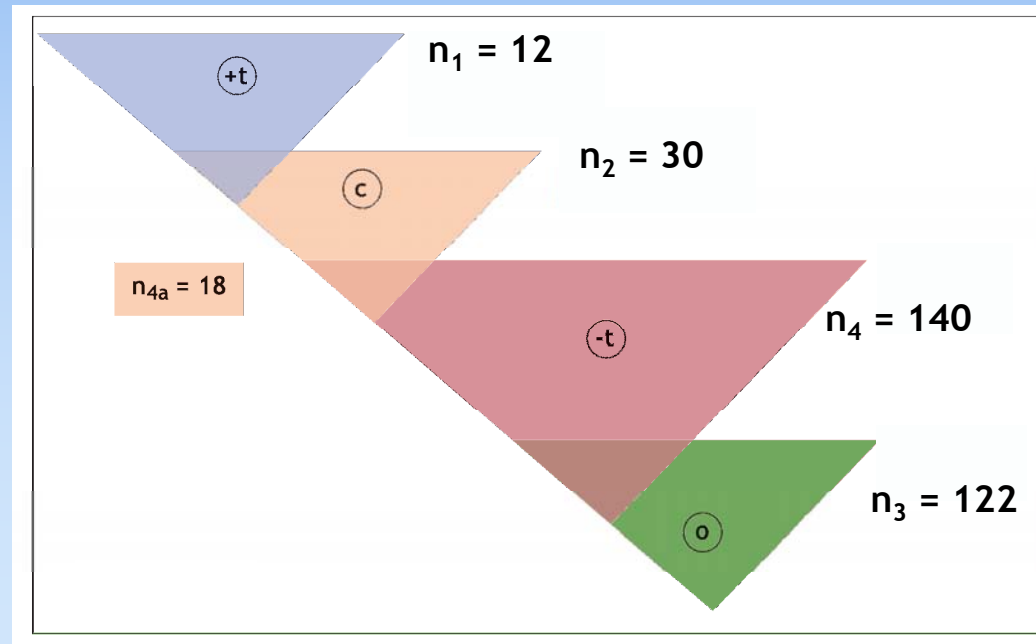
$n_4 = 140$

optimized armentarium vs. konventionel armentarium

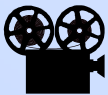
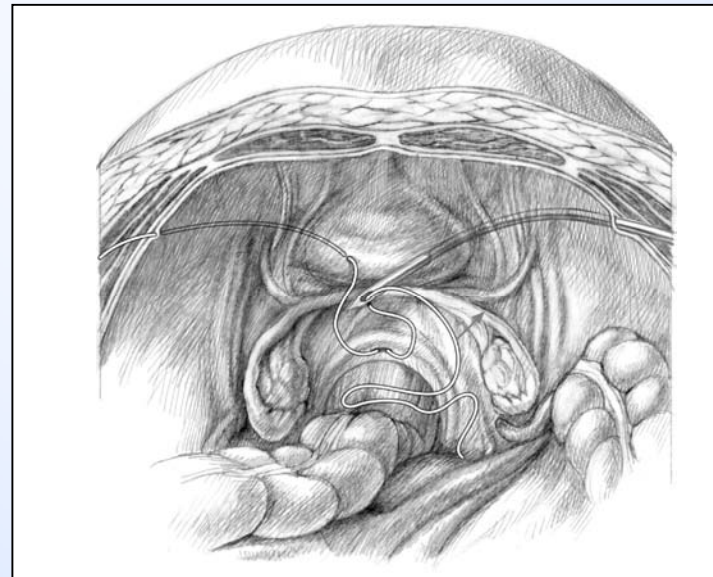
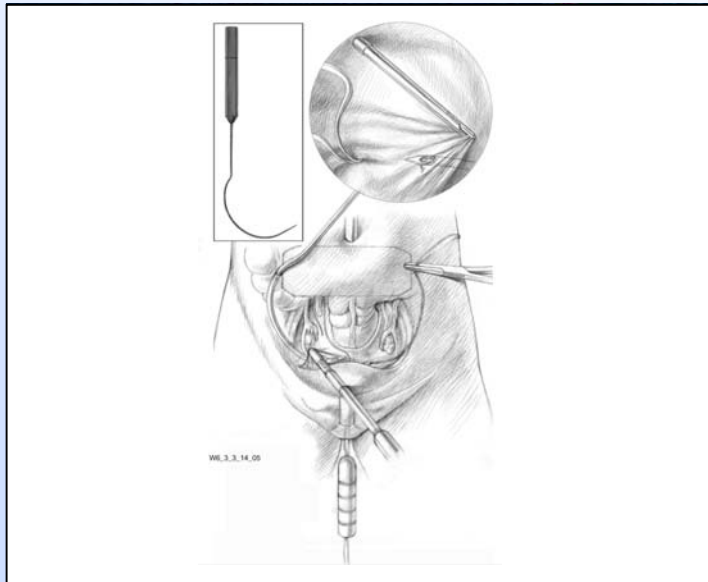
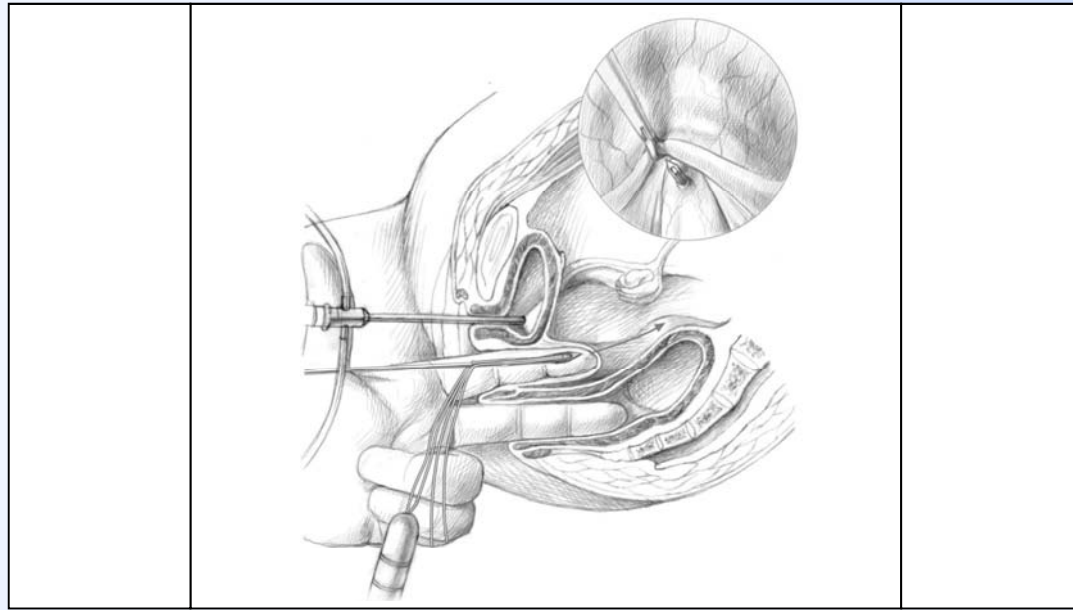
$n_3 = 122$

$n_2 = 30$

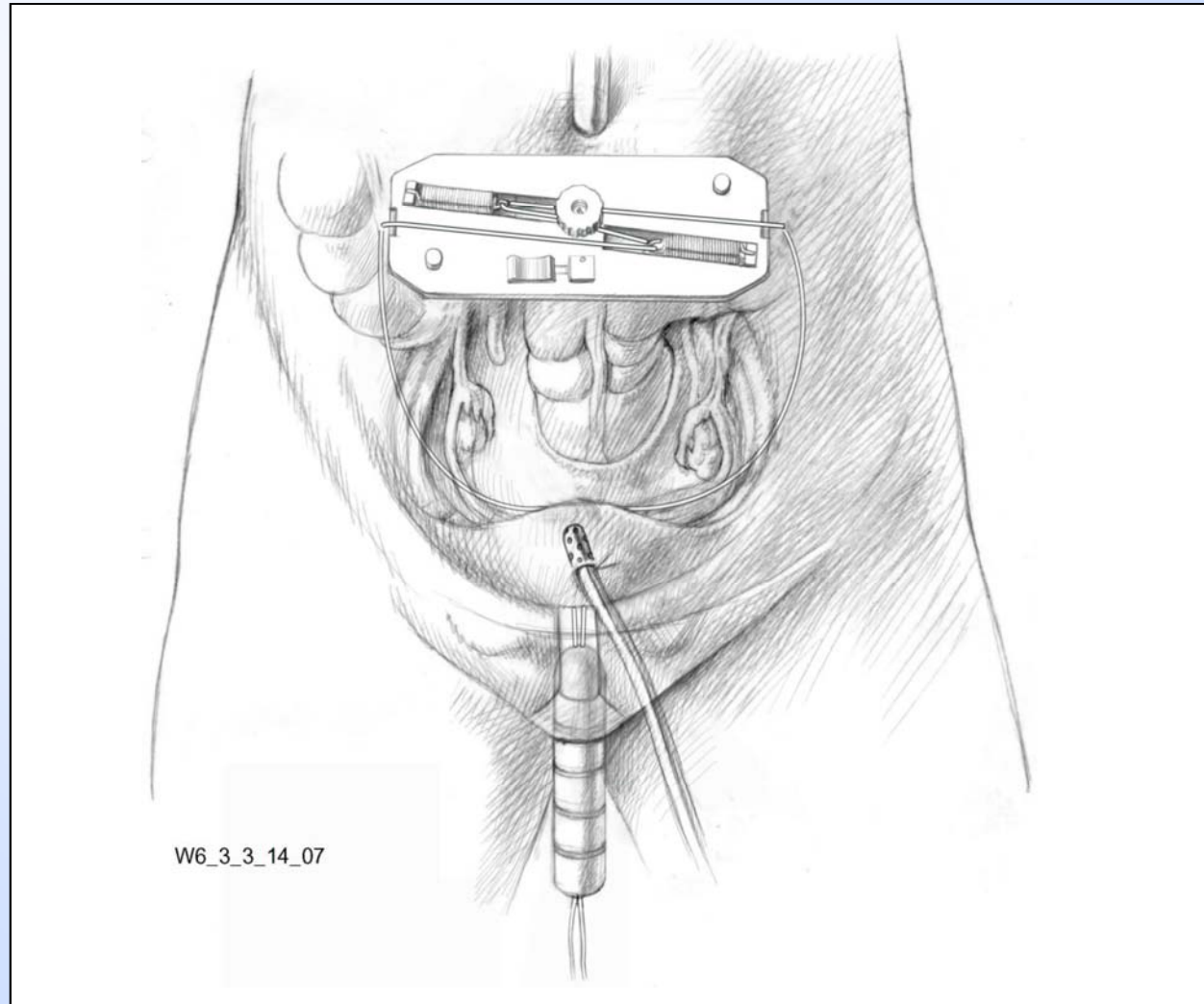
$n = 152$



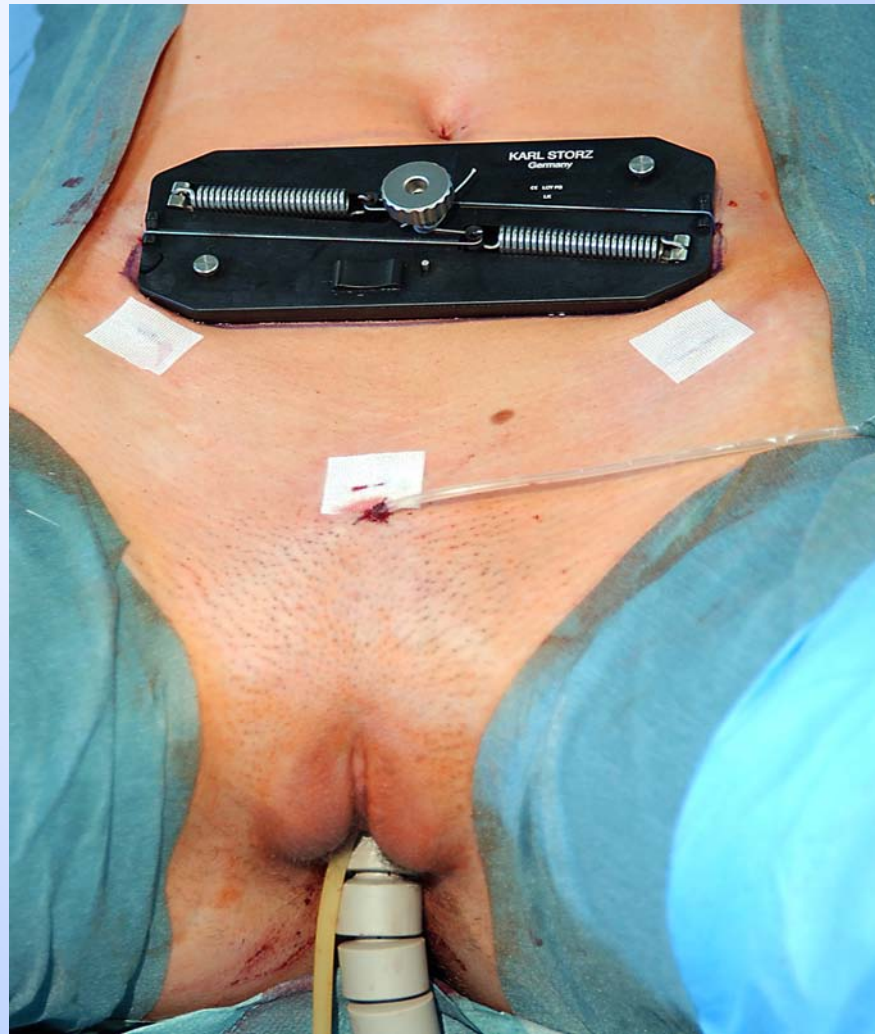
# Laparoscopic-assisted Neovagina



# Placement of the traction device and fixation of the threads



## Placement of the traction device and fixation of the threads

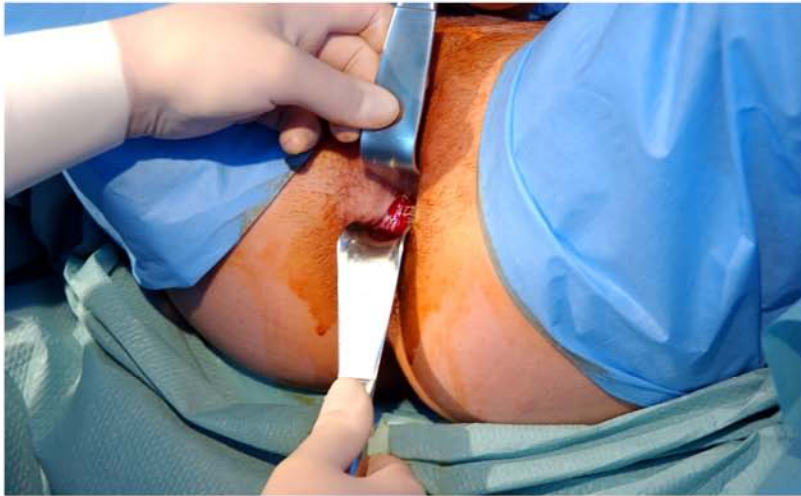


**Laparoscopic-assisted Neovagina:  
Optimizing due to new traction device and  
vagino-abdominale Perforation without dissection of vesico-rectale space**

## **Advantages**

- **Exacte localisation of perforation point due to simultaneously intraoperative zystoscopie and rectale Palpation**
  - prevention of bladder and bowl lesions
- **threads are totaly subperitoneal**
  - prolaps
- **Infinitely variable and equally tighten of both traction threads**
  - tearing of the neovagina
- **psychosocial support: better compliance for postoperative use of dummy**
  - early shrinking of neovagina

## Removing of traction device



<http://www.neovagina.de/index.php?lang=en&prt=fach&auth=L3rd6o60Mu8z>



# Laparoscopic-assisted Neovagina

## Results:

vagino- abdominale Perforation with vs non dissection of vesico-rectal space

Variable	Vagino-abdominal perforation (N=101)		Instrumentation (N=101)		
	With tunnelling	without tunnelling	Optimized	Conventional	
	Group 1 (N=12)	Group 4 (N=89)	Group 3 (N=71)	Group 2 (N=30)	
					Group 4a without tunnelling (N=18)
Age (years)	19.2 ±6.1	21.2 ± 6.2	21.5 ± 6.4	19.7 ± 5.6	20.1 ± 5.2
Diagnosis <sup>a</sup> (N [%])					
MRKH	10 (87.5)	83 (93.3)	66 (93.0)	27 (90.0)	17 (94.4)
AIS	2 (12.5)	6 (6.7)	5 (7.0)	3 (10.0)	1 (5.6)
Deformities <sup>b</sup> (N [%])					
Urinary tract [pelvic kidney]	NR	22 (26.5) [6 (7.2)]	17 (25.8) [5 (7.0)]	NR	5 (27.8) [1 (5.6)]
Skeletal <sup>c</sup>	NR	8 (9.6%)	5 (7.6%)	NR	3 (17.6)
Preoperative depth of vaginal dimple (cm)	NR	1.7 ± 1.5	1.5 ± 1.4	NR	2.6 ± 1.6
Predistension (N [%])					
Yes	NR	23 (25.8)	12 (16.9)	NR	11 (61.1)
No	NR	66 (74.2)	59 (83.1)	NR	7 (38.9)

**Brucker: Fertil Steril. 2007 Feb;87(2)**

# Laparoscopic-assisted Neovagina

## Results:

vagino- abdominale Perforation with vs non dissection of vesico-rectal space

Results:	With vrD	No vrD Old Set	No vrD New Set
	(n <sub>1</sub> = 12)	(n <sub>4a</sub> = 18)	(n <sub>3</sub> = 122)
Operation Time (min)	113* (75 - 155)	93,5* (55 - 150)	42,5* (20 - 114)
passagere intraoperative Via falsa: bladder (rectum)	1 (0)	1 (0)	2 (0)
-Injury of A. Iliaca externa	0	0	1
-Haematoma bladder (SPK)	0	1	2
-Bleeding after removing device	0	0	1
Post-op. length neovagina (cm)	8,9 (6 - 12 )	7,8 ( 6 - 12)	9,5 (6 - 12,5)
Time of tension (Days )	11,7* (7 - 15)* <sub>p &lt; 0,0001</sub>	7,5* (4 - 13)* <sub>p = 0,0001</sub>	4,6* (2 - 7)

# Laparoscopic-assisted Neovagina:

## Results:

optimized vs. conventional armentarium

	new set (n <sub>3</sub> = 122)	old set (n <sub>4a</sub> = 18)
- ripping of threads	non	6
- slipping of traction device		10
- skin lesions		5
- Luxation of dummy		0
- Dehiszenz Neovagina		1
Time of tension (days )	4,6*	7,5*

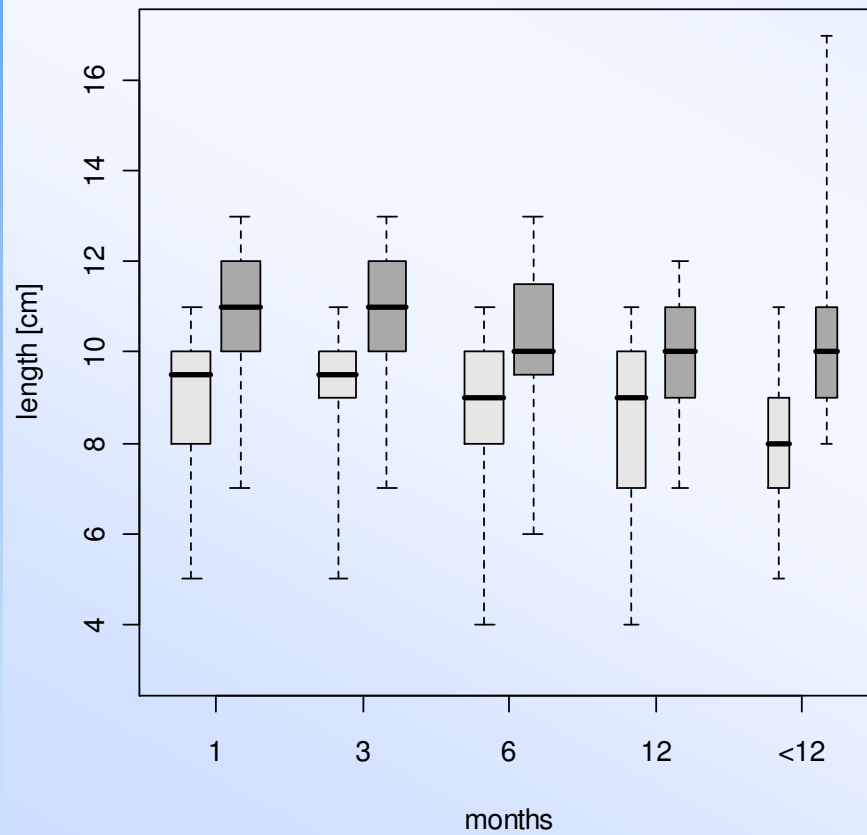
\*p = 0,0001

**Infinitely variable and equally  
tighten of both traction threads**

- **no tearing of the neovagina**

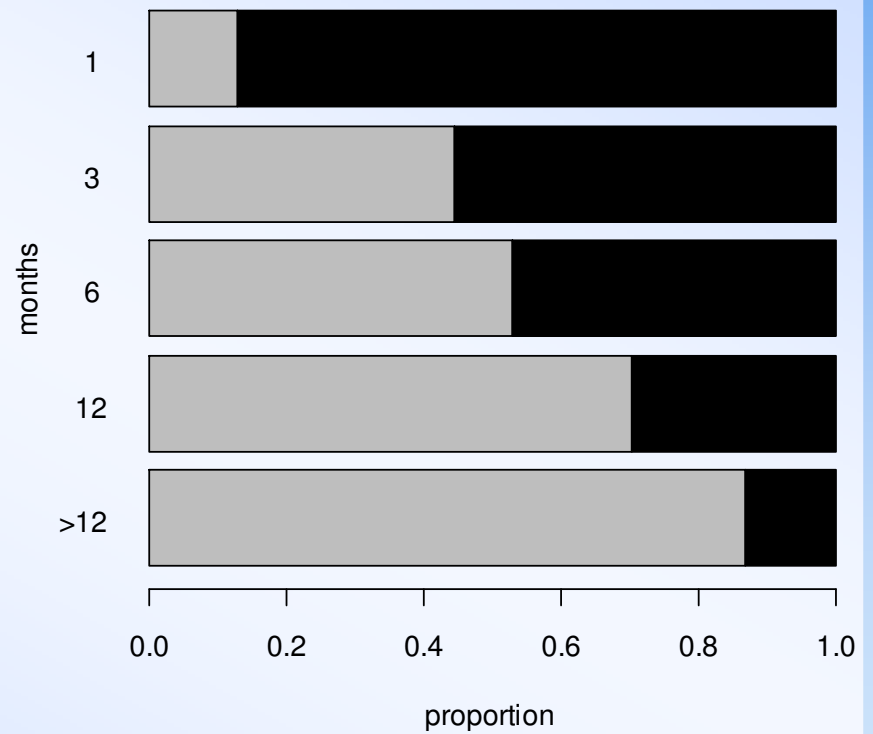
# Long-time follow up (n=135/152)

## Length neovagina



■ functional length  
■ anatomical length

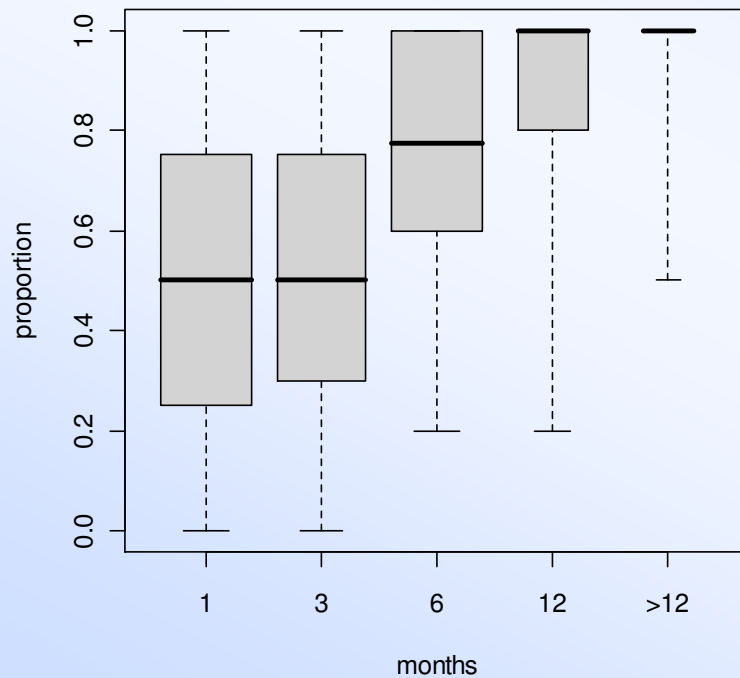
## Sexual intercourse



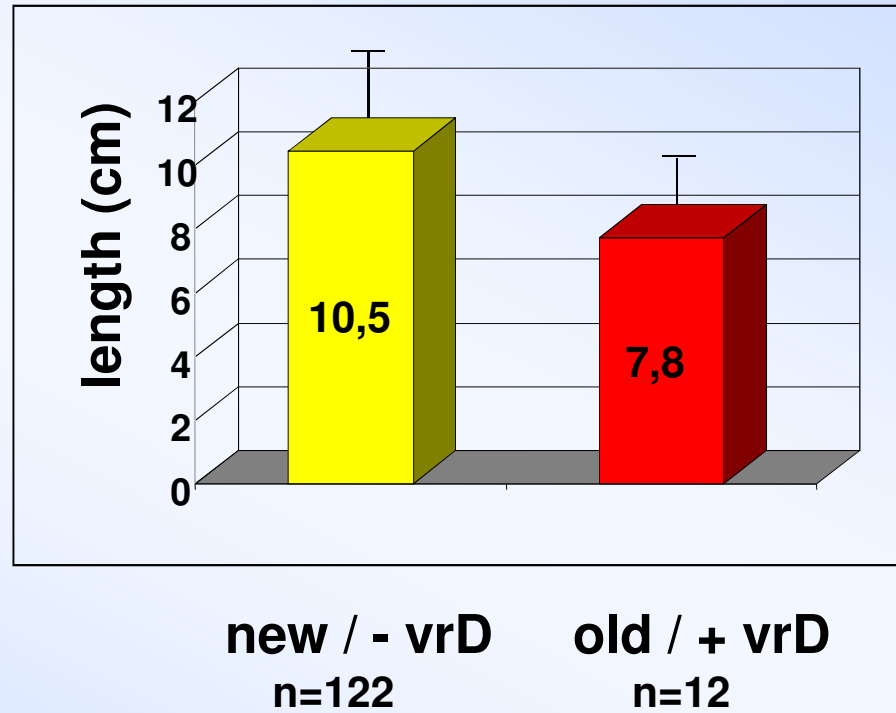
■ Sexual intercourse  
■ no sexual intercourse

# Long-time follow up

## Epithelialisation



## Functional length after 6 months



# [www.Neovagina.de](http://www.Neovagina.de) - Du bist nicht alleine!



**NeoVagina**  
Gesundheitsratgeber für Patientinnen

Eine Initiative der Frauenakademie der Uni-Frauenklinik Tübingen in Partnerschaft mit den Frauenärzten und Selbsthilfegruppen

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**Ratgeber**

**Im Brennpunkt**

**Scheidenaplasie**

**Rat und Hilfe**

**Neovagina-Sprechstunde**

**Selbsthilfegruppe**

**Erfahrungsberichte**

**FAQ - Häufige Fragen**

**Glossar**

**Forum**



## Scheidenaplasie!

Auf dieser Seite findest Du alles über das Thema Scheidenaplasie und Therapieformen.

**- Was ist das?** **Scheidenaplasie und mögliche Ursachen**

Vaginalaplasie bezeichnet die unvollständige Ausbildung der Scheide, als Folge verschiedener Syndrome, wie dem Mayer-Rokitansky-Küster-Hauser-Syndrom, der testikulären Feminisierung, dem Swyer- oder dem Turner-Syndrom.

**- Was kann ich dagegen tun?** **Behandlungsmöglichkeiten**

Es gibt verschiedene Therapien zur Behandlung der Scheidenaplasie. Durch die Entwicklung neuer Techniken und Instrumente in der Frauenklinik Tübingen, ist die Therapie der Wahl eine minimal-invasive (mittels Bauchspiegelung) Dehnungsmethode. Bereits seit Jahren wird diese Methode hier erfolgreich durchgeführt.

**- Wann kann ich weiterhelfen?**

Auf dieser Seite findest Du auf andere Namen und Informationen, die Dich interessieren und von denen Du Fragen beantwortet werden können. Am besten erreichst Du Dich telefonisch bei Fr. Dr. Brucker: 07071/2982211. Sie ist die Leiterin der Neovaginasprechstunde Tübingen.

# www.neovagina.de

# Conclusion

1. Safe, atraumatic, FDA-approved instruments for laparoscopic-assisted neovagina
2. Optimization due to vagino-abdominale perforation without dissection of vesico-rectale space
3. Optimization due to shorter operation time and time of tension with less complications along with better functional results

<http://www.neovagina.de/index.php?lang=en&pri=fach&auth=L3rd6o60Mu8z>

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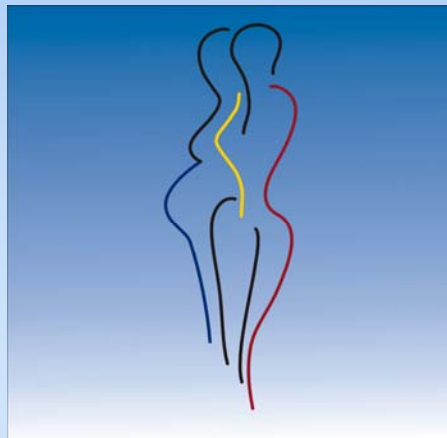
# Laparoscopic-assisted Neovagina

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**S. Brucker  
K. Rall  
D. Wallwiener**

Frauenklinik

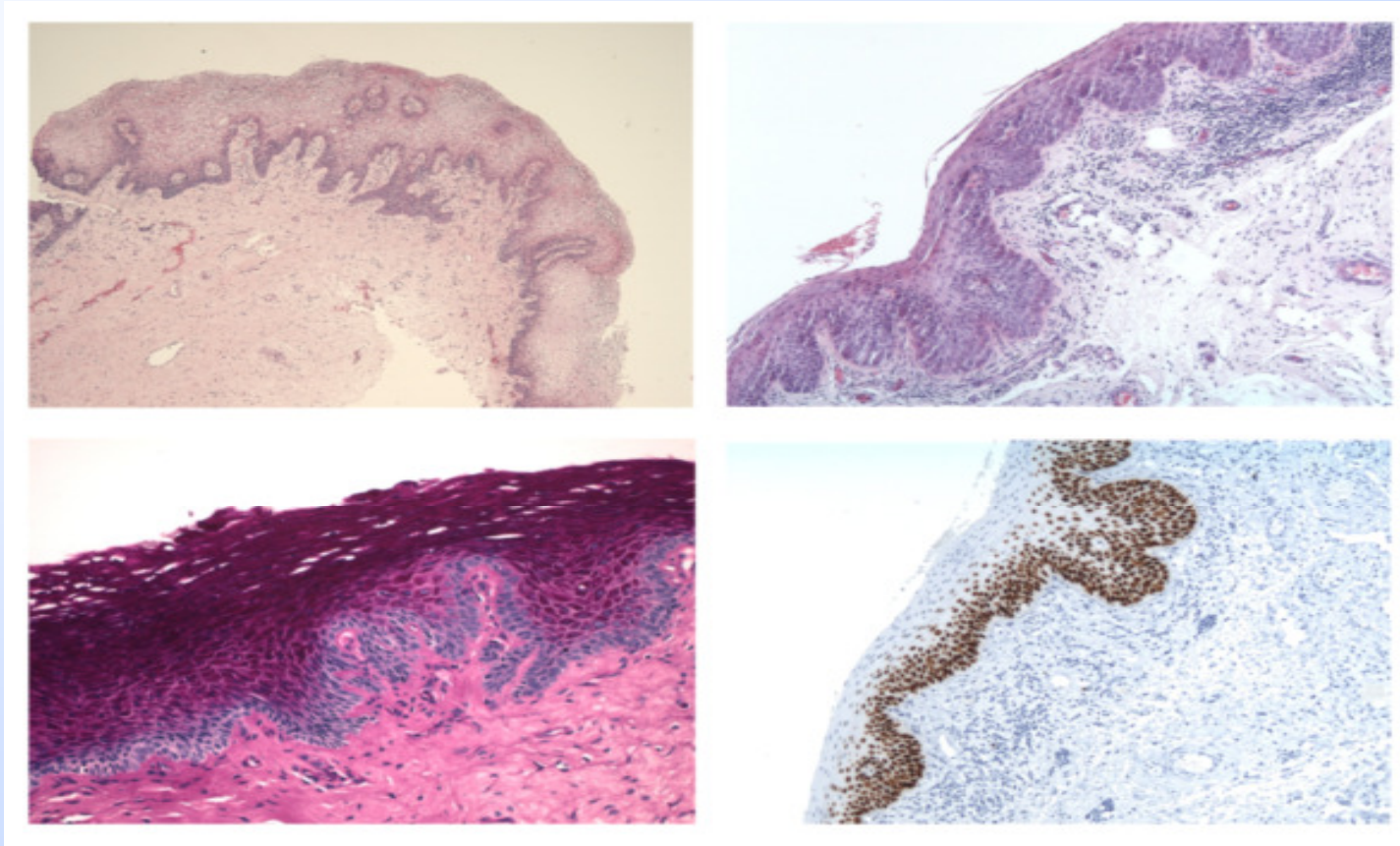
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# Results



**Vaginal mucosa: normal in thickness.**

**PAS-reaction: broad intermediate cell zone with abundant cytoplasmic glycogen and a covering layer of narrow, superficial cells.**

**IH reaction (cytokeratin 13): normal epithelial cells, squamos differentiations**

# McIndoe procedure with mesh - graft - transplantation

