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# Evaluation of perioperative and 6-months complications of the penile inversion vaginoplasty (PIV) in the realm of a learning-curve analysis

AUA, Washington 2020

# Conflict of interest

No conflict of interest.

## Study design

- Study:
  - Retrospective study, data 2014-2018
  - Patients:
    - Transgender, two-stage gender affirming surgery (GAS) male-to-female
  - FU:
    - perioperative, 6 weeks postoperative consultation incl. physical examination, uroflowmetry, 6 months after initial GAS 2<sup>nd</sup> surgery
  - Goals:
    - Study endpoint: functional outcome and complications
    - Learning-curve analysis (parameters: neovaginal depth and width, time of surgery, complications [Clavien Dindo & Comprehensive Complications Index])

## Results: Patient characteristics

Patient characteristics						
		N	Mean	Std. Dev.	Min	Max
Age	years	113	37	14.0	17.0	69.0
ASA Score		111	1.6	0.6	1.0	3.0
Size	cm	113	177.9	7.8	158.0	200.0
Weight	kg	113	80.1	18.3	43.0	150.0
BMI	kg/cm <sup>2</sup>	113	25.3	5.6	15.1	48.0
Charlson Com. Index		113	0.3	0.9	0.0	6.0
Hormonal therapy	years	97	3.0	3.0	1.0	16.0
Comorbidities						
		N	Yes	%		
S.a. circumcision		106	23	21.7		
Depression		113	23	20.4		
Diabetes mellitus		113	2	1.8		
Art. hypertension		113	11	9.7		
CHD		113	1	0.9		
Art. occlusive disease		113	1	0.9		
COPD		113	2	1.8		
<b>FU: 6,3 months</b>						

## Results: Complications

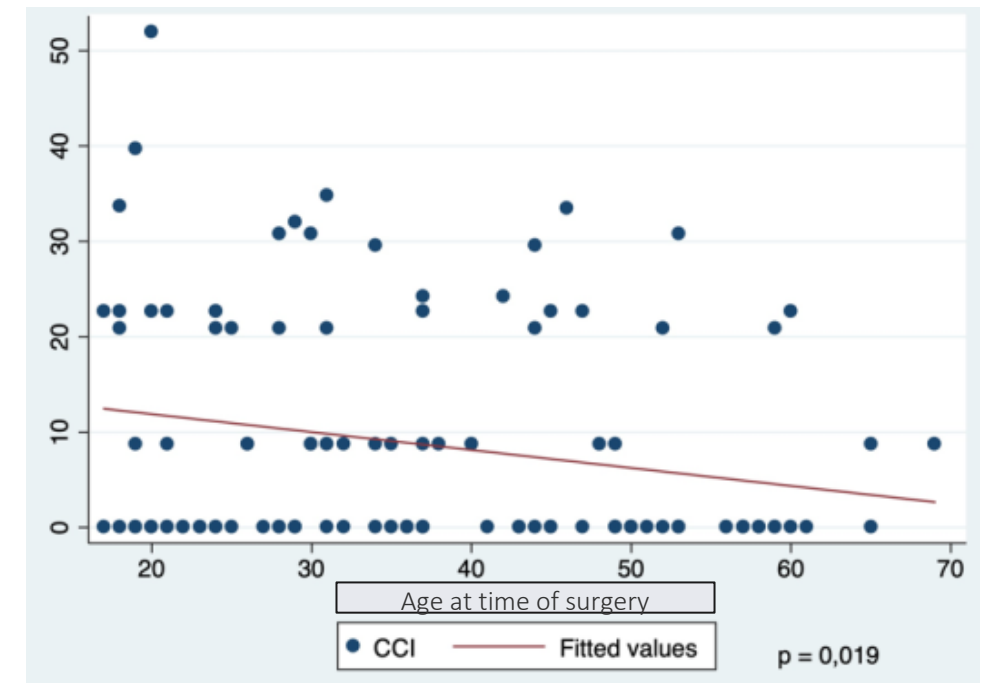
<b>Complications after PIV</b>		
<b>Patients treated</b>	<b>113</b>	<b>%</b>
<b>Short-Term</b>		
Wound infections, requiring treatment	19	16.8
Wound dehiscence	14	12.4
Postoperative bleeding, requiring treatment	4	3.5
Postoperative bleeding, requiring surg. revision	2	1.8
<b>6 months after 1<sup>st</sup> stage</b>		
Introitus stricture	11	9.7
Neovaginal atrophgia	10	8.8
Urethral stricture	10	8.8
Clitoral necrosis	5	4.4
Urethral necrosis	5	4.4
Rectovaginal fistula	4	3.5

- Short-term: 8.9% of the patients showed >1 complication
- 25% of the patients had short-term complications
  
- 6 months: 8.9% of the patients showed >1 complication
- 21% of the patients had 6-months complications, which were partially corrected in the 2<sup>nd</sup> stage of the PIV

## Results: Regression analysis of CCI

- Significant correlation with complications:
  - **Age:  $p=0.02$**
- No significant correlation with complications:
  - Time of hormonal therapie:  $p=0.12$
  - Scrotal skin flap (n=14) (e.g.. S.a. circumcision):  $p=0.21$
  - BMI:  $p=0.63$
  - Charlson Comorbidity Index:  $p=0.63$

CCI (Comprehensive Complications Index) according to age			
Age	N	Mean	SD
17 - 30	44	11.15	13.76
31 - 50	45	8.28	11.01
51 - 69	24	4.69	9.22
	113	8.63	11.98



## Results: Functional outcome

Neovaginal depth	N	%
atrophy	1	1.1
122 mm	7	7.6
135 mm	8	8.7
150 mm	8	8.7
163 mm	25	27.2
<b>177 mm</b>	<b>43</b>	<b>46.7</b>
	92	

Orgasm	N	%
Yes	37	72
No	21	28
	58	

preoperative 1<sup>st</sup> stage



pre-2<sup>nd</sup> stage

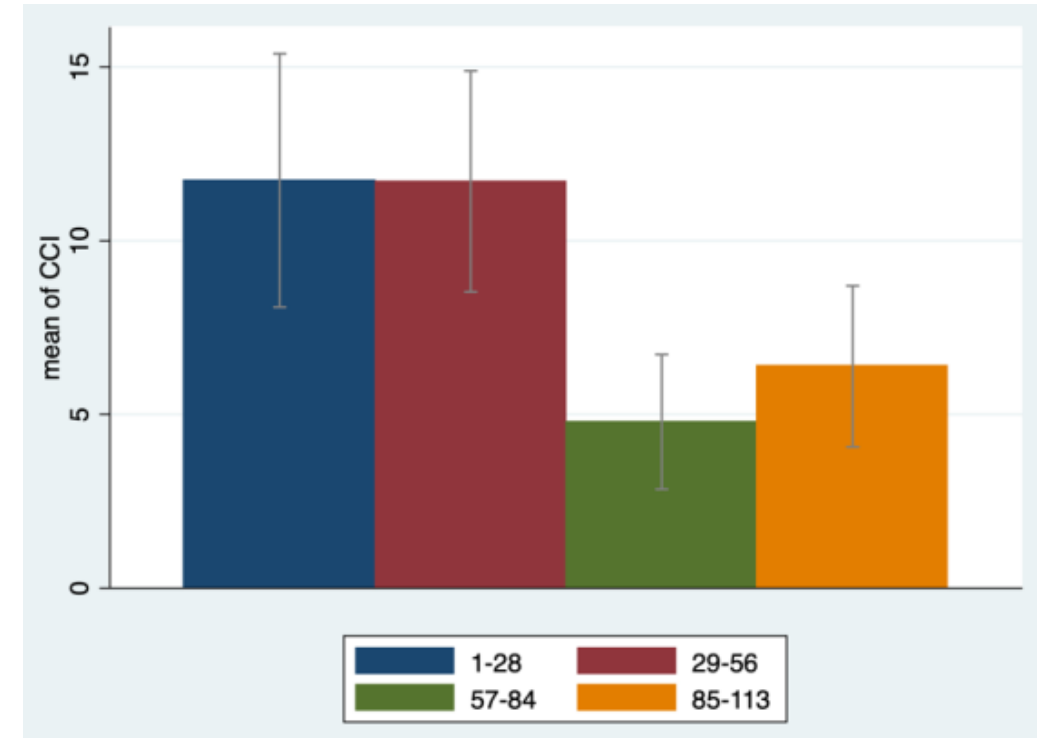


post-2<sup>nd</sup> stage



## Results: Learning-curve analysis

- Time of surgery vs. No. of surgeries performed:
  - significant  $p < 0.001$
- Neovag. depth vs. No. of surgeries performed:
  - significant  $p = 0.04$
- CCI vs. No. of surgeries performed:
  - significant  $p = 0.03$





## Summary

- **Complications:**
  - Short-term complications were predominantly classified as Clavien I und II; 21% showed 6-months complications, which were partially corrected in the 2nd stage of the GAS
  - Younger patients showed significantly more complications
  - Time of hormonotherapy, scrotal flap, BMI oder a high Charlson Index showed no significant correlation with CCI
- **Learning-Curve:**
  - After 56 PIV-surgeries, a significant reduction of surgery time and CCI was to be seen