Approaches for Transoral Surgery

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1

Disclosure

- Funding
  - IO1 BX-003456
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- Clinical Trial Support
  - Celldex Therapeutics
  - AstraZeneca- Global PI

2

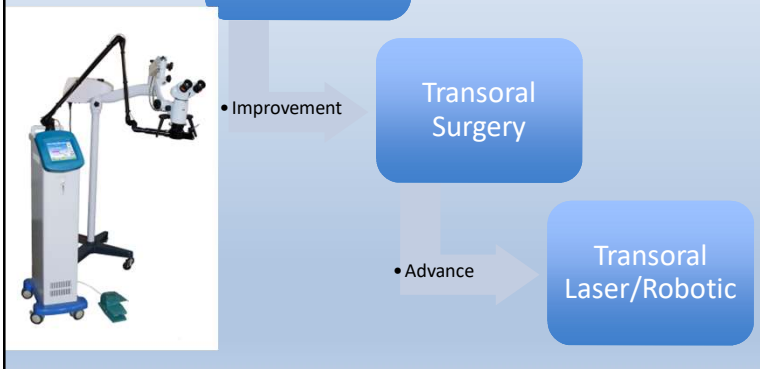
Minimally Invasive Surgery

- Gained significant interest in the recent past
- The evolution of minimally invasive surgery has now progressed

- Laparoscopy / Endoscopy
- Transoral laser microsurgery (TLM)
- Rigid, laparoscopic robotic surgery
- Transoral robotic surgery (TORS)
- Flexible Transoral Robotic surgery

3

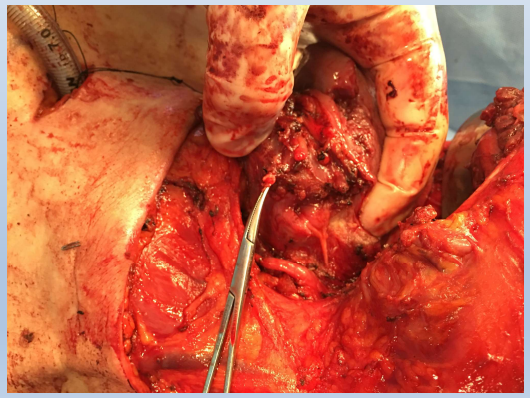
PROGRESSION OF APPROACHES



4

Progression of techniques

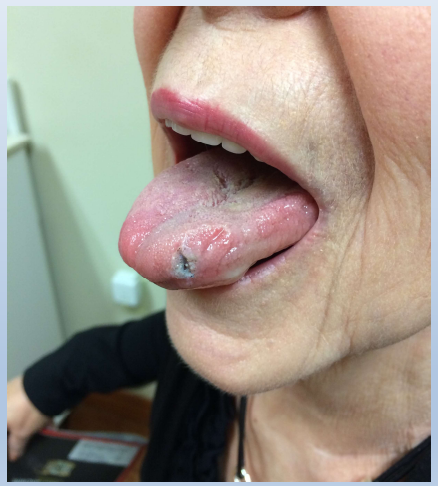
- Open approaches are the mainstay for advanced disease



5

Less invasive approaches

- Smaller tumors are amenable to transoral surgery
- Advances in technology
  - Laser fiber guides
  - Robotic technology allows for delivery of the laser



6

Transoral Laser Microsurgery

- Endo-Larynx and True Vocal Cords
- Supraglottis
- Oropharynx
- Oral Cavity

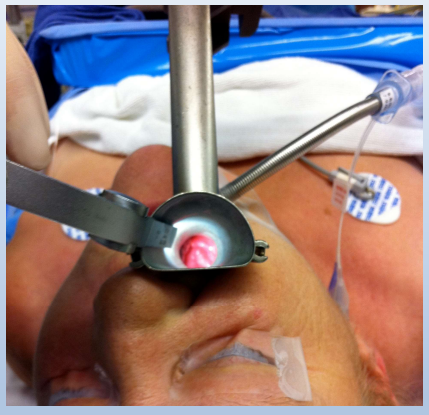
7

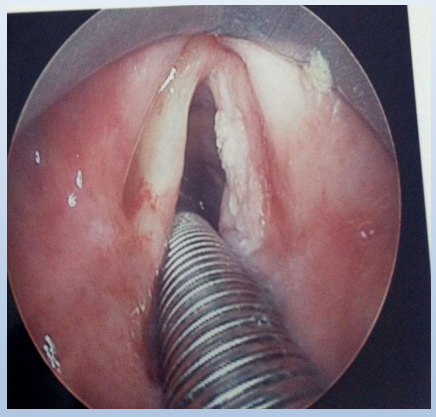
Types of Laser

- Carbon Dioxide (CO2) Line-of Site Laser
  - Micromanipulator
- Handheld Fiber Lasers
  - KTP Laser
  - Omniguide CO2 Laser
  - Revolix Thulium YAG Las
  - Other

8

Glottic carcinomas





- Early stage can be treated with surgery only
- Exposure is important

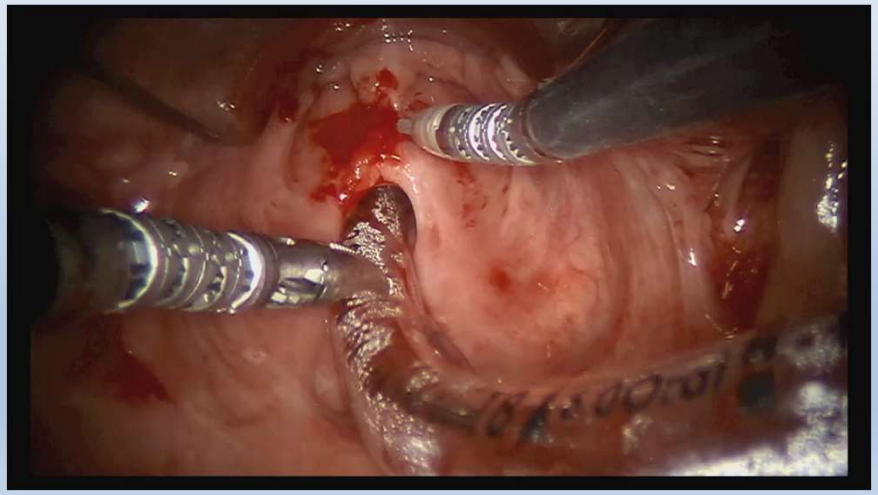
9

Challenges

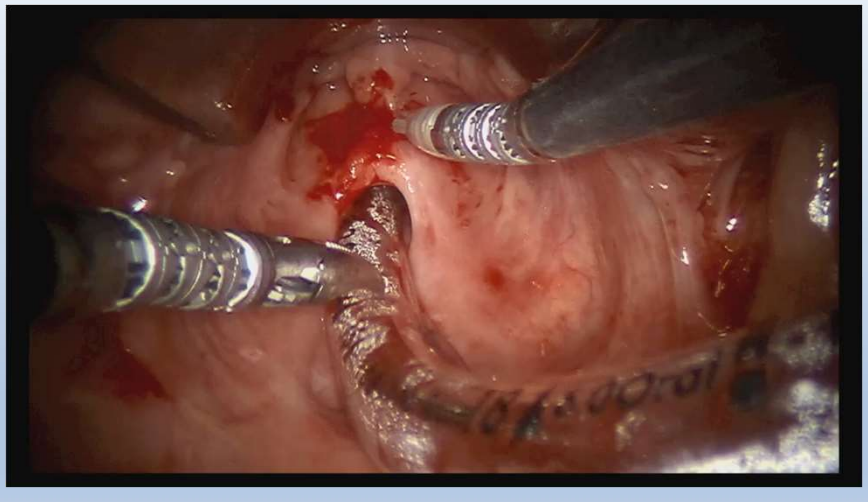
- Transoral approaches have minimized the morbidity of resections
- TLM: can be challenging
  - Exposure
  - Learning curve
- Other technologies have improved adoption
  - TORS

10

TORS for benign disease

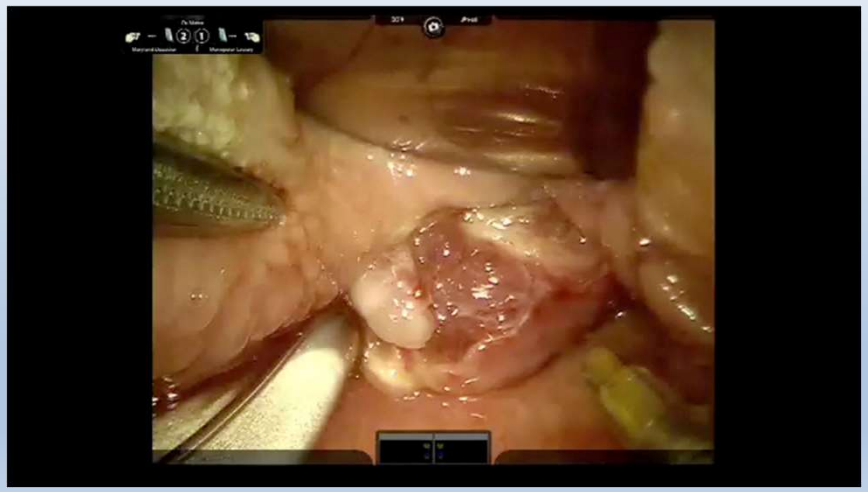


11



12

Video of T3 tumor resection



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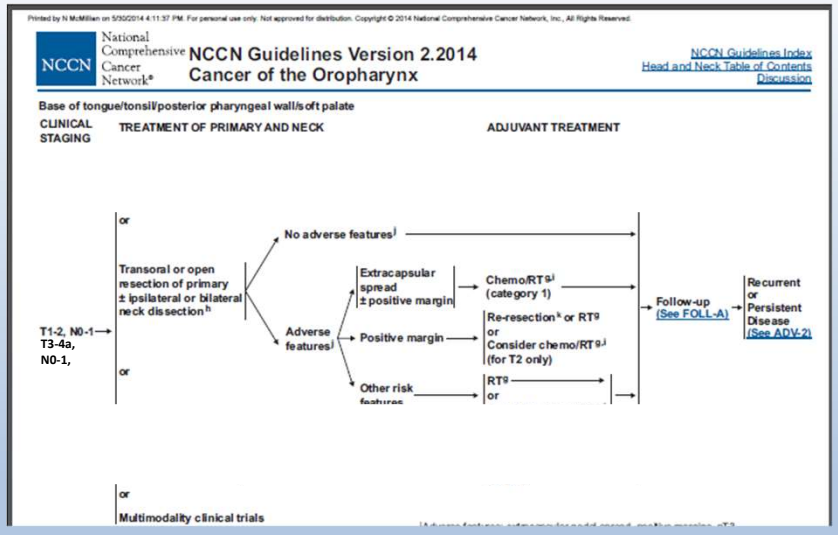
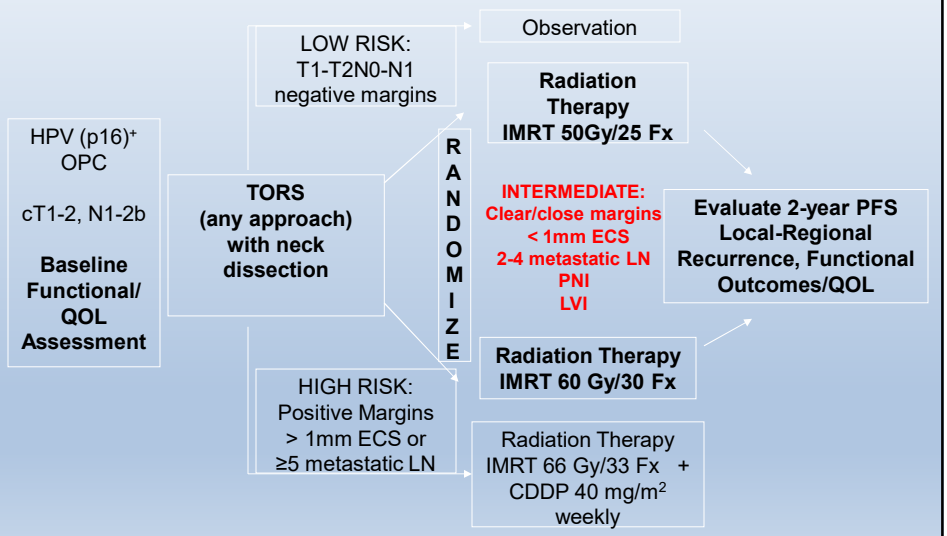


The goal: fewer modalities of therapy

14

ECOG 3311 Trial Design



15

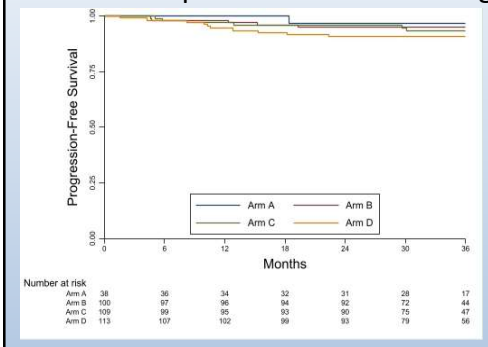
Results

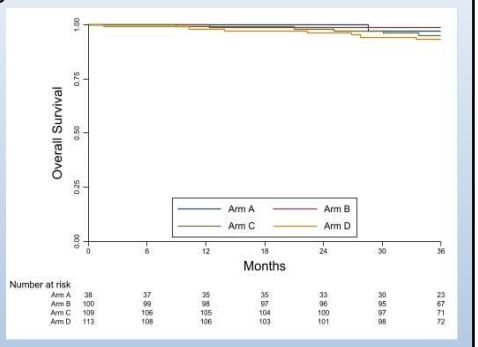
	N	2-year PFS	90% CI	Deaths (without recurrence)	Recurrences	LRF	DM
Arm A	37	93.9%	87.3, 100	0	2	1	1
Arm B	102	95.0%	91.4, 98.6	1	4	2	2
Arm C	104	95.9%	92.6, 99.3	0	4	0	4
Arm D	110	90.5%	85.9, 95.3	3	7	4	3

- There were 2 treatment-related deaths (one surgical and one Arm D)
- TOS + low-dose radiation is worthy of further study, since the primary endpoint of the upper bound of the 90% CI (in the intermediate risk group) exceeding 85% was met

16

Kaplan-Meier curves – eligible and treated





3-year PFS estimates and 90% CI:
Arm A: 96.9% (91.9%, 100%)
Arm B: 94.9% (91.3%, 98.6%)
Arm C: 93.5% (89.4%, 97.9%)
Arm D: 90.7% (86.2%, 95.4%)

3-year OS estimates and 90% CI:
Arm A: 100%
Arm B: 99.0% (97.3%, 100%)
Arm C: 95.0% (91.5%, 98.7%)
Arm D: 93.3% (89.4%, 97.4%)

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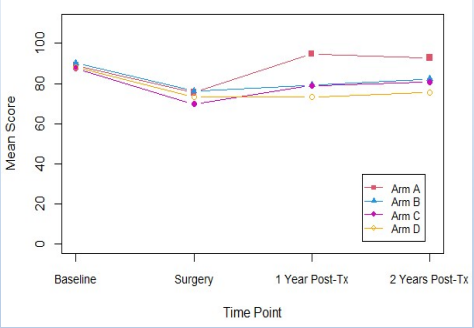
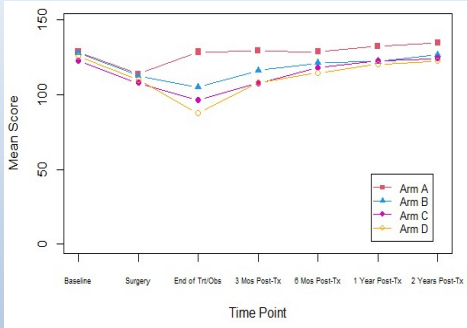
17

MDADI Composite Scores



FACT H&N Total Scores



QOL endpoint: Change in FACT-H&N total score from baseline to 6 months post-RT. Comparison defined a-priori as "improved" (change ≥ 7 points) or "stable" (-6 <- change <- 6) vs. "worsened" (change ≤ -7 points).

Arms B/C vs. D: 56% in Arms B/C vs. 38% in Arm D (p-value = 0.011)
Arm B vs. C: 63% in Arm B vs. 49% in Arm C (p-value=0.056)

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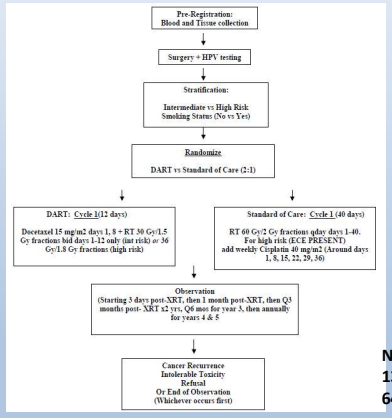
18

MAYO CLINIC

MC1675



N = 194
130 DART (30-36 Gy)
64 SOC (60 Gy)

19

Summary

- Excellent results
  - ECS+ pN2 group had poor outcomes
  - DM rate is high

20

ORIGINAL ARTICLE

Cost-effectiveness o
classification oropha

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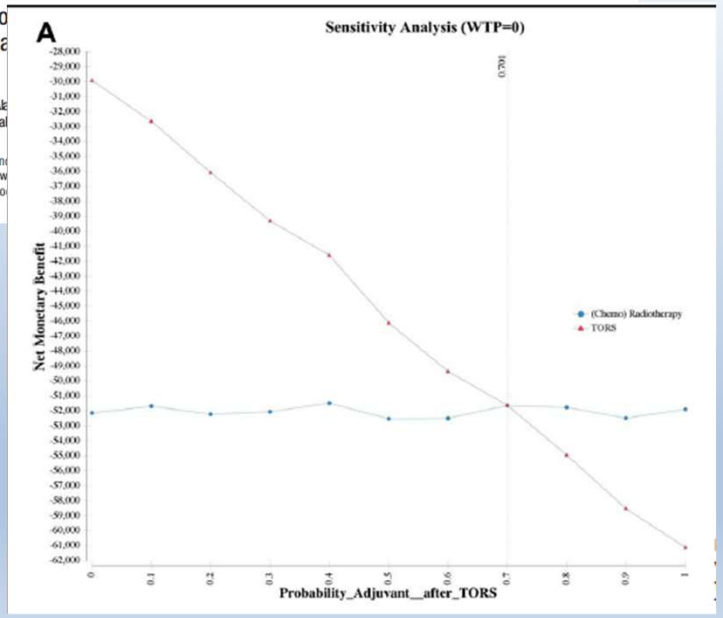


21

22

ORATOR

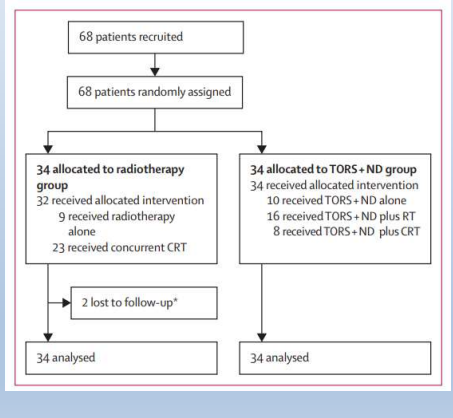
- T1 or T2, N0–N2 (maximum nodal size ≤4 cm) OPSCC
- assigned to either radiotherapy, with concurrent chemotherapy in node-positive patients or TORS plus neck dissection, with adjuvant therapy depending on pathological findings

Nichols et al. Lancet Oncology 2019

- Margin was 2mm, but clinically surgical cuts were marked at 1cm.

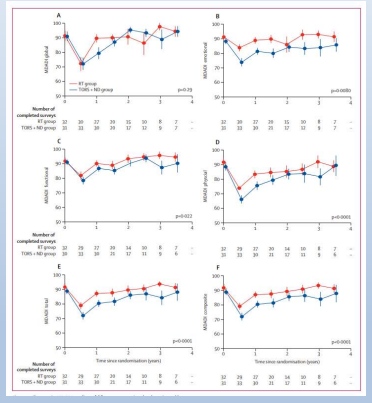
23

Treatment Assignments



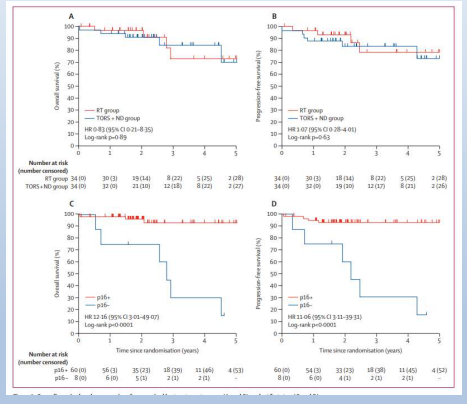
24

MDADI scores over time



25

OS and PFS



26

Oncologic data

- Positive margin rate
  - 4/34
- ECS : 8/34 patients

27

Who should have MIS?

- Try to de-escalate therapy
- Upfront surgery is ideal in patients who can avoid adjuvant therapy
  - T1-2 N0-1
- May have a role in de-escalating therapy in other cohorts
  - Minimal ECS
  - <5 nodes
- Prospective data is forthcoming

28

DaVinci Si, Xi, and SP

DaVinci Si system

daVinci Si - 2 arms surgery

- 2 arms
- Maryland & HS
- 5mm instruments

DaVinci Xi system

daVinci Xi - 3 arms surgery

- 3 arms
- Maryland, ProGrasp & Scissors
- Energy source: ERBE system
- 8mm insturments

DaVinci SP system

daVinci SP - 3 arms surgery

- 3 arms
- Maryland, ProGrasp & Scissors
- Energy source: ERBE system
- 6mm insturments

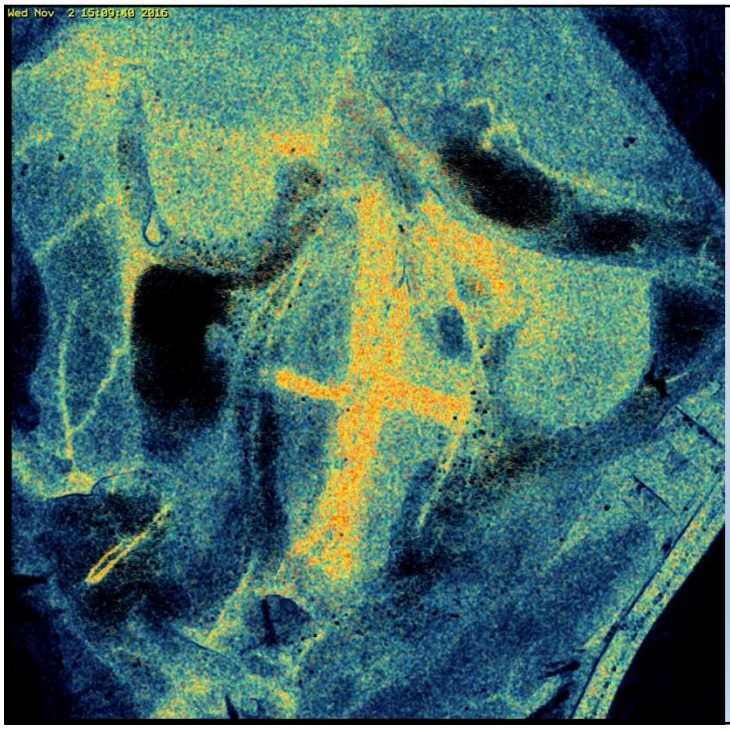
Retroauricular approach

SEVERANCE HOSPITAL YONSEI UNIVERSITY HEALTH SYSTEM

29

STAR Robot

30



31

The Future

32

Summary

- New technologies have changed how we manage patients with diseases of the H&N
- Laser technology serves as a useful tool
- Surgery has evolved to robotic-assisted platforms.
- These continue to evolve
  - Semi-autonomous surgery???

33

THANK YOU
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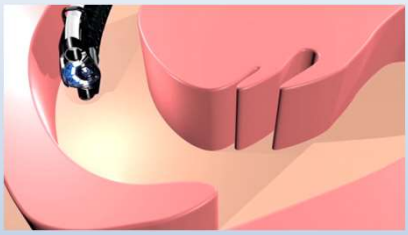
34

TWO OPTIONS FOR TORS

- Line of sight
- Flexible
- Haptics
- Mobility

35

TECHNOLOGICAL IMPROVEMENTS

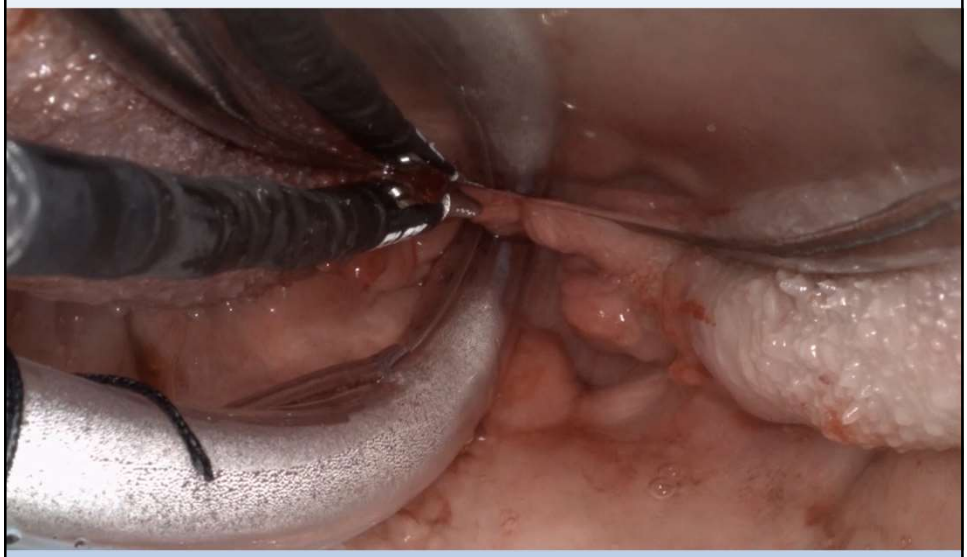


- Line of sight

- Portability

36

3D 1080p Case at UPMC



37