Preliminary Report
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Touch surgery to improve surgical performance with a robotic system in a public hospital in Central America

Abstract

Since 2012 robotic surgery has been available in Panama. In 2022, the Hugo robot became available in a public hospital. The adoption of a new robotic platform can be difficult. We reviewed our experience in implementing this robotic system for urologic surgery in a public hospital in Central America using Touch surgery, a cloud-based video storage and analytics system, available on smartphones. We use the Touch surgery reports to compare time in minutes between the 5 first and the last 5 radical prostatectomy surgeries.

Keywords: robotic surgery, HUGO training, urologic laparoscopy

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Abbreviations: TS, touch surgery; DVC, dorsal venous complex

Introduction and objective

Robotic surgery for urologic disease is becoming increasingly widespread. However, there is a known learning curve for this technology that can inhibit its adoption. Since 2012 robotic surgery has been available in Panama. In 2022, the Hugo robot became available in a public hospital. The adoption of a new robotic platform can be difficult. The use of a cloud-based video storage and analytics system can be useful to obtain similar results.[1] We reviewed our experience in implementing this robotic system for urologic surgery in a public hospital in Central America.

Methods

In October 2022, the HUGO robotic system was installed at a public hospital in Panama; this was the first system installed in Central America. In our country, we have surgeons with 10 years of experience using a robot for laparoscopic-assisted surgery. Touch Surgery (TS) is a cloud-based video storage and analytics platform which provides seamless access to surgical videos, annotations, and data. It can be used for debrief, reflect, and structured feedback for clinicians. Is available for use in smartphones.[2,3]

We reviewed the experience of one of our surgeons, changing the robotic platform, to compare the TS reports and data for 10 radical prostatectomies. We analyzed port insertion and access, bladder detachment, vas deferens, seminal vesicle, and rectum separation, prostate pedicle transection and neurovascular bundle separation, DVC (Dorsal venous complex) and urethral transection, DVC ligation, vesicourethral anastomosis, and specimen retrieval. TS report included time in minutes. We compare times between the 5 first and the last 5 surgeries. Student´s-t-test (Excell) was used to compared the groups with a P of 0.05.

Results

10 robotic-assisted laparoscopic surgeries were performed and data report from TS was stored, debriefed, and analyzed. Total time ranges between 90 to 265 min, average 150 min. The first 5 surgeries averaged 193 min (172-265), and the next 5 averaged 106.8 min (90-128), with an improvement of 45 minutes. Table 1 Comparison of TS results showed differences between the 5 first and 5 las surgeries in Vas Deferens, Seminal Vesicle and Rectum Separation (20 vs 13.9 min), Prostatic Pedicle Transection and Neurovascular Bundle Separation (28 vs 16.3 min), and Vesicourethral Anastomosis (65 vs 30 min) (P: 0.04, Pearson 0.99). Figure 1 & Figure 2 show the TS results in case 1 and 10.

Table 1 TS report comparison between cases

	Patient 1-5 Mean time.Minutes	Patient 6-10 Mean time. Minutes	P:0.05
Port Insertion and Access	16.15	4.95	NS
Bladder Detachment	17.3	10.13	NS
Bladder Neck Transection	8.55	11.95	NS
Vas Deferens, Seminal Vesicle and Rectum Separation	20.06	13.91	0.04
Prostatic Pedicle Transection and Neurovascular Bundle Separation	28	16.34	0.04
DVC and Urethral Transection	17.24	13.35	0.04
DVC LIGATION	4.75	0.3	NS
SPECIMEN RETRIEVAL	3.91	0.78	NS
Lymph Node Dissection	5.72	7.72	NS
Vesicourethral Anastomosis	65.4	30.2	0.04
Total time	193.4	106.8	0.04

1. Port Insertion and Access	19:06	10:46
2. Bladder Detachment	10:59	14:25
3. Bladder Neck Transection	11:45 ↑	7:55
4. Vas Deferens, Seminal Vesicle and Rectum Separation	15:08	17:11
5. Prostatic Pedicle Transection and Neurovascular Bundle Separation	16:50	22:51
6. DVC and Urethral Transection	8:56 ↓	15:23
7. DVC Ligation	1:50	6:08
8. Specimen Retrieval	6:16	3:02
9. Lymph Node Dissection	16:30	16:51
10. Vesicourethral Anastomosis	1:04:40	49:07

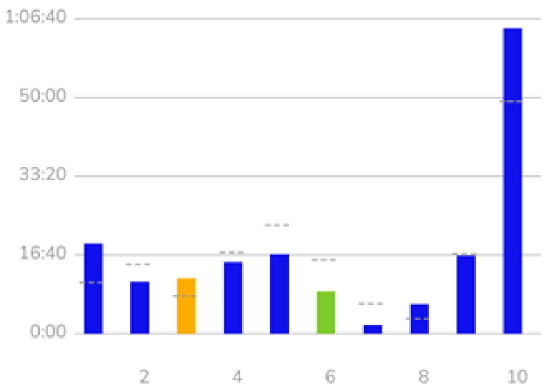

Figure 1 Case 1 Radical prostatectomy. TS report.

1. Port Insertion and Access	3:25	10:46
2. Bladder Detachment	10:56	14:25
3. Bladder Neck Transection	8:08	7:55
4. Prostatic Pedicle Transection and Neurovascular Bundle Separation	20:47	22:51
5. Vas Deferens, Seminal Vesicle and Rectum Separation	6:01 ↓	17:11
6. DVC and Urethral Transection	10:41	15:23
7. Lymph Node Dissection	18:38	16:51
8. Vesicourethral Anastomosis	26:30	49:07

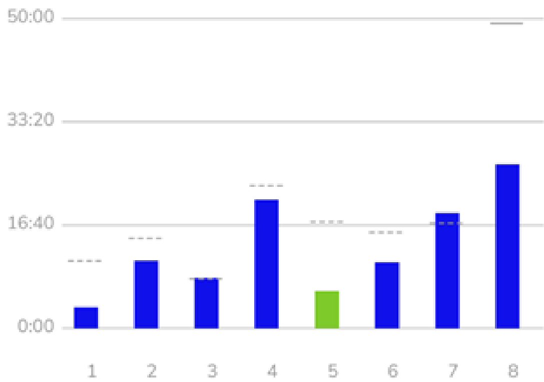

Figure 2 Case 10 TS report.

Conclusion

Touch surgery can to be a useful tool for improving performance and surgical skills. Experienced surgeons using other robotic platforms can track by themselves their progress using the HUGO robot. In this preliminary report, TS allowed the analysis of the video and data of robotic surgery with HUGO, showing the improvement during the first 10 cases. The adoption of the new platform HUGO is measurable and safe using TS. This application can be useful for storing and debriefing, is available in smartphones, and can be useful for physicians in training in robotic surgery.[4] Robotic systems with educational technology like TS will permit the widespread use of robotic surgery and expand to diverse international regions and non-academic institutions.

Acknowledgments

None.

Conflicts of interest

The authors declares that there is no conflict of interest.

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