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The Lack of a Physical Exam During New Patient Telehealth Visits Does Not Impact Plans for Office and Operating Room Procedures

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OBJECTIVE To understand how the lack of a physical examination during new patient video visits can impact urological surgery planning during the COVID-19 pandemic.

METHODS We retrospectively reviewed 590 consecutive urology patients who underwent new patient video visits from March through May 2020 at a single academic center. Our primary outcome was procedural plan concordance, the proportion of video visit surgical plans that remained the same after the patient was seen in-person, either in clinic or on day of surgery. Median days between video and in-person visits were compared between concordant and discordant cases using the Mann-Whitney U test; $P < .05$ was significant.

RESULTS Overall, 195 (33%) were evaluated by new patient video visits and had a procedure scheduled, of which, 186 (95%) had concordant plans after in-person evaluation. Further, 99% of plans for in-office procedures and 91% for operating room procedures were unchanged. Four patients (2.1%) had surgical plans altered after changes in clinical course, two (1%) due to additional imaging, and three (1.5%) based on genitourinary examination findings. Days between video visit and in-person evaluation did not differ significantly in concordant cases (median 37.5 [IQR, 16 - 80.5]) as compared to discordant cases (median 58.0 [IQR, 20 - 224]; $P = .12$).

CONCLUSIONS Most surgical plans developed during new patient video visits remain unchanged after in-person examination. However, changes in clinical course or updated imaging can alter operative plans. Likewise, certain urologic conditions (eg, penile cancer) rely on the genitourinary examination to dictate surgical approach. UROLOGY 167: 109–114, 2022. © 2022 Elsevier Inc.

Telehealth usage has burgeoned secondary to the COVID-19 pandemic, with an approximate increase in telehealth claims of 6000% and over 42% of Americans utilizing this modality between the summers of 2019 and 2020.[1] A 2021 survey of adults in the United States revealed that almost 90% of patients want to continue using telehealth services for non-urgent consultations and 80% believe quality care is provided with telehealth appointments.[2] Currently, the COVID-19 public health emergency continues to facilitate telehealth use by supporting reimbursement of new patient visits and limiting restrictions in where this care is delivered (ie at home instead of a different clinic).[3]

While the use of telehealth for established patients in urology suggests telehealth is a substitute for outpatient clinic visits,[4,5] little is known about the impact of video or phone evaluations on surgical planning. For instance, it is possible that a careful history corroborated by labs/imaging may be all that is needed for surgical planning. In fact, a retrospective, single-center study by Lightsey et al. demonstrated that 94% of spine surgery plans established virtually did not change following in-person evaluation.[6] On the other hand, there may be conditions or clinical presentations where an examination is essential for determining surgical planning. For example, recent data supports the need for pre-operative physical examination in patients interested in vasectomy reversal, as its omission could result in technical or functional failure.[7]

Previous investigators have shown, surgical plans generated during new patient (NP) telehealth encounters agreed with the final surgical plan in 92 to 100% of cases by orthopedic subspecialty (96% overall).[8] Herein, we

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expand upon this work by examining whether urological surgery plans made at the time of NP telehealth evaluations were impacted by a pre-operative physical examination. We specifically evaluated whether surgical plans made at time of telehealth visit were unchanged after a clinic visit or pre-operative examination immediately before surgery (concordant cases). In addition, we identified virtual surgical plans that did change following in-person evaluation, (discordant cases) along with documented reasons for these alterations in an effort to better characterize the reliability of NP virtual surgical plans within urology.

METHODS

Study Cohort

The electronic medical record was retrospectively queried for consecutive urology patients who underwent new patient (NP) video visits from March through May of 2020 at Michigan Medicine (Ann Arbor, MI). These video visits spanned 6 subspecialties of urology at this institution, including general urology, oncology, neurourology and pelvic reconstruction/female pelvic medicine and reconstructive surgery (NPR/FPMRS), genitourinary reconstructive surgery (GURS), andrology, and endourology. We identified all patients who had a procedure or surgery recommended during their video visit and scheduled thereafter. These patients were then either seen in clinic or on the day of surgery without interval telehealth evaluation. This study was granted exemption by the University of Michigan institutional review board.

Primary Outcome

The primary outcome was procedural plan concordance. We defined procedural plan concordance as the proportion of video visit plans that remained the same after the patient was seen in-person, either in clinic or on the day of surgery. The authors (JJA, CE, NWE) who have clinical expertise in urology, assessed this outcome by looking at the assessment and plan in the patient's medical chart during the time of the video visit and reviewing follow up visits and surgical encounters. For example, if the patient's plan was to have a unilateral kidney stone treated surgically, we looked to see if there was a deviation from the plan. Deviations could have occurred based on a patient's clinical course such as worsening of symptoms (eg, unilateral to bilateral stone treatment) or availability of additional cross-sectional imaging changing the surgical approach (eg, shockwave to laser lithotripsy). Additionally, since a NP video visit forgoes a head-to-toe evaluation, a physical examination on the day of surgery could have also accounted for changes in the surgical plan.

Statistical Analysis

Clinico-demographic characteristics were compared between all patients and those with a procedural/surgical plan as well as based on concordance status using the Mann-Whitney U test for continuous variables and Fisher's exact test or Chi-square for proportions based on sample size for proportions. Median time (days) between NP video and in-person visits for concordant vs discordant cases was a secondary outcome and compared using the Mann-Whitney U test. Statistical analyses were conducted using Microsoft Excel (Redmond, WA); $P < .05$ was considered significant.

RESULTS

Study Population

Of the 590 total patients identified, 195 (33%) were evaluated by new patient video visits and had a procedure or surgery scheduled and subsequent in-person evaluation (in clinic or day of surgery [DOS]), making up our cohort of interest. Of which, 49% were seen by general urology, 27% by oncology, 4% by NPR/FPMRS, 5% by GURS, 2% by andrology, and 14% by endourology. Across all subspecialties, 52% of virtual surgical plans were for in-office procedures and 48% were for operating room surgeries. Clinico-demographic characteristics for the overall cohort and by concordance status are shown in Table 1. Overall, 186 patients (95%) had concordant surgical plans after in-person evaluation (Fig. 1**A**). Further, 99% of plans for in-office procedures and 91% of plans for operating room procedures were concordant with virtual visit recommendations (Fig. 1**B**).

Concordant vs Discordant Cases

Rates of concordance by subspecialty were 98% (93/95) in general urology, 94% (50/53) in oncology, 75% (6/8) in NPR/FPMRS, 100% (9/9) in GURS, 100% (3/3) in andrology, and 93% (25/27) in endourology (Table 2). The 5 most common interventions for concordant cases were cystoscopy, prostate biopsy, prostatectomy, vasectomy, and ureteroscopy with or without lithotripsy (Table 3). Overall, there were 9 discordant cases, which makes up 4.6% of the population of interest. Of these, 4 patients (44%) had their surgical plans altered due to a change in their clinical course, two (22%) changed due to additional imaging that was ordered, and three (33%) were counseled at their video visit that operative approach would depend on genitourinary examination findings at the time of their in-person examination. Descriptions of discordant cases and factors influencing a change in plan, including 1 cancellation, are outlined in Table 4. Our secondary outcome, the number of days between video visit and in-person evaluation, did not differ significantly in concordant cases (median 37.5 [IQR, 16 - 80.5]) compared to discordant cases (median 58.0 [IQR, 20.0 - 224]; $P = .12$).

DISCUSSION

In the present study, the majority of surgical and procedural plans developed during new patient urology video visits were unchanged after in-person examination. In particular, in-office procedures had a higher rate of concordance than operating room surgeries. Meanwhile, a subset of urological conditions (eg, penile cancer) rely on the genitourinary examination to dictate the surgical approach. Collectively, these findings provide a foundation for continued used of new patient telehealth even when surgical or procedural plans are being created for urologic conditions.

Previous authors have shown data supporting the increased use of telehealth for new patient surgical evaluations. During the early stages of the COVID-19 pandemic, 58.8% of surgeons in the state of Michigan performed telehealth to provide patient care and 26.8% used telehealth for new patient visits.[9] However, this same group found that telehealth conversion rates were highest (14.3%) for urologists. Our data provides additional granularity by

Table 1. Clinico-demographic characteristics of new patient urology video visits at Michigan medicine from March through May 2020

	All New Patient Video Visits (n = 590)	Video Visit Surgical Plan & Follow-up (n = 195)	*P-value*	Concordant Cases (n = 186)	Discordant Cases (n = 9)	*P-value*
Demographic Characteristics						
Age	54.0 (37.0-66.0)	58.0 (43.0-67.0)	.068	58.0 (42.8-68.0)	54.0 (45.5-63.5)	.7
Gender						
Male	420 (71%)	142 (73%)	.7	136 (73%)	6 (67%)	.7
Female	170 (29%)	53 (27%)	-	50 (27%)	3 (33%)	-
Race						
Black	42 (7%)	15 (8%)	.8	14 (8%)	1 (11%)	.5
White	482 (82%)	163 (84%)	.5	157 (84%)	6 (67%)	.17
Asian	22 (4%)	4 (2%)	.4	4 (2%)	0 (0%)	>.9
Other	44 (7%)	13 (7%)	.7	11 (6%)	2 (22%)	.11
Ethnicity						
Hispanic	22 (4%)	2 (1%)	.056	2 (1%)	0 (0%)	>.9
Non-Hispanic	535 (91%)	177 (91%)	>.9	170 (91%)	7 (78%)	.2
Unknown	33 (6%)	16 (8%)	.19	14 (8%)	2 (20%)	.16
CCI	2.0 (2.0-3.0)	2.0 (2.0-5.0)	>.9	2.0 (2.0-3.5)	3.0 (1.0-5.0)	.8
ASA Score						
1	11 (2%)	4 (2%)	.8	4 (2%)	0 (0%)	>.9
2	130 (22%)	59 (30%)	.02*	58 (31%)	1 (11%)	.3
3	100 (17%)	50 (26%)	.007*	45 (24%)	5 (56%)	.049*
4	6 (1%)	2 (1%)	>.9	2 (1%)	0 (0%)	>.9
Unknown	343 (58%)	80 (41%)	<.001*	77 (41%)	3 (33%)	.7
Subspecialty						
General	305 (52%)	95 (49%)	.5	93 (50%)	2 (22%)	.17
Oncology	116 (20%)	53 (27%)	.027*	50 (27%)	3 (33%)	.7
Endourology	70 (12%)	27 (14%)	.5	25 (13%)	2 (22%)	.4
Andrology	24 (4%)	3 (2%)	.11	3 (2%)	0 (0%)	>.9
GURS	23 (4%)	9 (5%)	.7	9 (5%)	0 (0%)	>.9
NPR/FPMRS	52 (9%)	8 (4%)	.03*	6 (3%)	2 (33%)	.046*
Visit Details						
Month						
March	91 (15%)	24 (12%)	.29	23 (12%)	1 (11%)	>.9
April	231 (39%)	68 (35%)	.29	61 (33%)	7 (78%)	.009*
May	268 (45%)	103 (53%)	.073	102 (55%)	1 (11%)	.014*
Imaging available	256 (43%)	96 (49%)	.16	90 (48%)	6 (67%)	.3
Imaging ordered	189 (32%)	66 (34%)	.6	61 (33%)	5 (56%)	.17
Additional Info.						
Surgery setting						
Office	101 (17%)	101 (52%)	-	100 (54%)	1 (11%)	.016*
OR	94 (16%)	94 (48%)	-	86 (46%)	8 (89%)	.016*
Days between video and in-person visits	-	38.0 (17.0-83.0)	-	37.5 (16.0-80.5)	58.0 (20.0-224)	.12

ASA Score, American society of anesthesiology score; CCI, Charlson comorbidity index; FPMRS,female pelvic medicine & reconstructive surgery; GURS,genitourinary reconstructive surgery; NPR,neuro-pelvic reconstruction.
Values displayed as median (IQR) or n (%). Demographic and clinical characteristics were compared between both groups using the Mann-Whitney U test for continuous variables and Fisher's exact test or Chi-square for proportions based on sample size.
$P < .05$ was considered statistically significant (*).

showing that despite higher conversion rates overall, the majority (95%) of surgical/procedural plans developed during NP urology video visits were unchanged after in-person examination. Data from other surgical specialties supports our findings as virtual surgical plans were rarely altered after in-person evaluation, particularly within the orthopedic surgery literature.[6,8]

Our data corroborates that of others who have studied new patient, urologic telehealth evaluations during the pandemic. Doolittle et al found that 97% of patients who had a telehealth consultation for vasectomy completed their in-office procedure, with no statistically significant difference to the 98% completion rate of those who underwent in-office physical examination during the same time frame.[10] While there are no published comparisons of outcomes and cancellation rates for surgeries arranged for telemedicine, prior authors found that 2.3% of scheduled urologic surgeries are cancelled due to patient being "unfit on the day of surgery" [11] compared to just 1 patient (0.5% of cases) in our study having surgery cancelled due to new jaundice identified in-person pre-operatively.

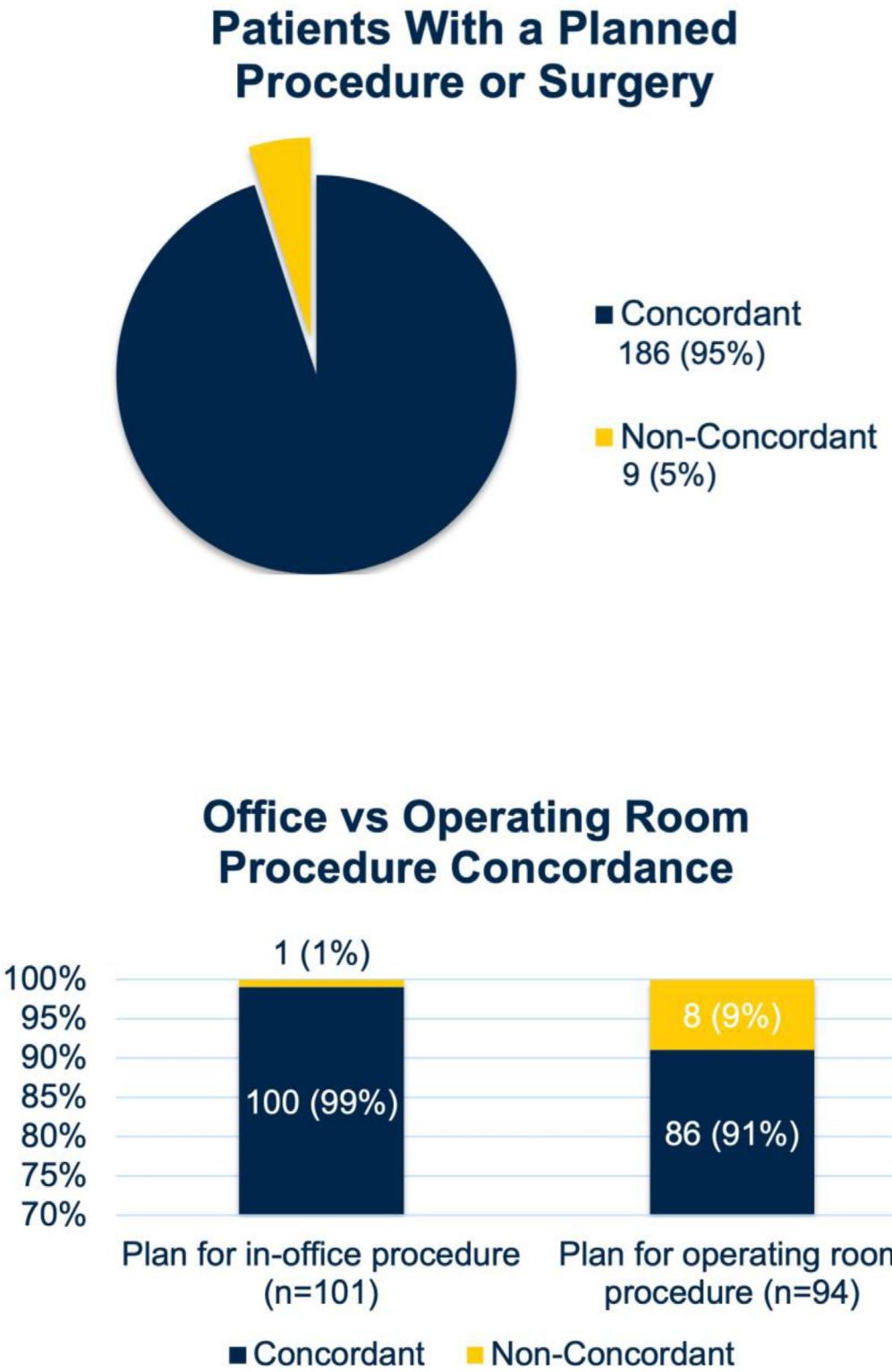

Figure 1. (**A**) Overall New Patient Virtual Procedural Plan Concordance. (**B**) In-office vs Operating Room Procedural Plan Concordance. (Color version available online.)

A limited physical examination has been a point of controversy regarding telehealth implementation, particularly when assessing for subtle or sensitive findings. Overall, these data support the reliability of NP telehealth surgical plans in the absence of a physical examination. More importantly, this study promotes a better understanding of factors contributing to changes in the plan. Although changes in clinical course accounted for 44% of plan discordance, a subset of urological conditions (eg, penile cancer) were shown to rely on the genitourinary examination to dictate the surgical approach.

Table 2. New patient virtual surgical plan concordance by subspecialty

Subspecialty	*N (%)*	*Concordance Rate*
General	95 (49%)	93/95 = 98%
Oncology	53 (27%)	50/53 = 94%
Endourology	27 (14%)	25/27 = 93%
Andrology	3 (1.5%)	3/3 = 100%
GURS	9 (4.6%)	9/9 = 100%
NPR/FPMRS	8 (4.1%)	6/8 = 75%

NPR: Neuro-Pelvic Reconstruction; FPMRS: Female Pelvic Medicine & Reconstructive Surgery; GURS: Genitourinary Reconstructive Surgery

Table 3. New patient virtual surgical plan concordance by subspecialty

Procedure	*N*	*Concordance*
Cystoscopy (+/- other procedures*)	58	57/58 = 98%
Prostatectomy	21	21/21 = 100%
Prostate biopsy (+/- fusion)	18	18/18 = 100%
Vasectomy	18	18/18 = 100%
Ureteroscopy +/- Lithotripsy	15	14/15 93%
Cystectomy	8	8/8 = 100%
Nephrectomy (radical or partial)	8	7/8 = 88%
Percutaneous Nephrolithotomy	8	7/8 = 88%
Fluoroscopic Urodynamic Studies	8	6/8 = 75%
Transurethral Resection of Bladder Tumor	7	7/7 = 100%
Hydrocelectomy, Spermatocelectomy, Varicocelectomy	3	2/3 = 66%
Penile biopsy/laser ablation	3	1/3 = 33%

* Other procedures: stent removal, Direct Vision Internal Urethrotomy, Botox injection, pyelogram/nephrostogram

Table 4. Discordant new patient virtual surgical plans with descriptions of overall course and factors contributing to changes in the plan following in-person evaluation

Sub-specialty	Time of in-Person Evaluation	Primary Diagnosis	Imaging Available at Video Visit	Video Visit Plan	In-person Plan	Factor Contributing to Plan Discordance
Endourology	DOS	Kidney stone	CT abd/pelvis, US Renal	Right shockwave lithotripsy	Right URS w/ laser lithotripsy	Additional Imaging
Endourology	DOS	Kidney stone	CT abd/pelvis	Left PCNL/antegrade URS	Bilateral PCNL/ antegr-ade URS	Clinical Course
Oncology	DOS	Penile cancer	CT urogram	Laser ablation vs other indicated procedures	Penile biopsy with CO2 laser ablation	Physical Examination
NPR/ FPMRS	DOS	Mixed urinary incontinence	None	Cystoscopy, FUDS	Cystoscopy	Clinical Course
Oncology	Clinic	Renal mass	MRI Abdomen	Right Robotic Partial Nephrectomy	Canceled due to patient jaundice	Clinical Course
NPR/ FPMRS	DOS	Ureterovaginal fistula	CT pelvis	Cystoscopy, FUDS, possible nephrostomy tube	Right PCN tube by IR pending ureteral reconstruction	Clinical course
Oncology	DOS	Penile cancer	None	Partial penectomy vs CO2 laser ablation	Partial penectomy	Physical Examination
General	DOS	Spermatocele	US Scrotal	Right Spermatocelect-omy	Right Epididymect-omy	Physical Examination
General	DOS	Gross hematuria	None	Cystoscopy	URS w/ laser lithotripsy	Additional Imaging

DOS, day of surgery; FPMRS,:, female pelvic medicine & reconstructive surgery; FUDS,:, fluoroscopic urodynamic study; IR,:, interventional radiology; PCNL, percutaneous nephrolithotomy; PCN,percutaneous nephrostomy; URS, :, ureteroscopy; US,ultrasound;NPR,neuro-pelvic reconstruction.

This study does have limitations. In addition to a relatively small sample size, subspecialities of urology are not equally represented in the sample, thereby limiting cross comparisons. This is due to our focus on analyzing consecutive urology NP video visits during first COVID-19 surge, which supports the generalizability of our findings given a better picture of telehealth trends in urology as a whole during this time. Also, we are limited in our understanding of pre-existing data available at the time of the NP video visit. Although this study accounted for available imaging, other data points such as an emergency department examination or other examination findings documented within the patient's medical record may have affected the concordance rate. That said, there are inherent limitations given our retrospective study design. However, with a focus on appropriate interpretation, the value of these data is in helping to lay the foundation for larger, prospective studies in the future. As such, it is important to clarify that the present study focuses on descriptive data, and more robust studies are surely needed to drive clinical application.

Our work is of interest to providers and policymakers alike. For providers and healthcare organizations who have invested in telehealth, our data highlights the feasibility of using telehealth for new patient procedural or surgical planning. However, additional work is required to better understand factors contributing to plan discordance and defining the clinical scenarios in which video visits may or may not be appropriate. For policymakers, this case series highlights the potential for improving access to surgical sub-specialty care at a time when the role of telehealth in the United States is still directly connected to the COVID-19 public health emergency. Over 400 organizations, including the American Urological Association, have urged the United States Congress to ensure that Medicare patients continue to have broader access to telehealth.[12] Research in this space could allow urologists to ensure their patients have access to evaluation and management of their conditions, including the ability to schedule procedures and surgeries where clinically appropriate.

CONCLUSIONS

The majority of surgical plans developed during new patient video visits remain unchanged after in-person examination. Meanwhile, our findings support relying on the genitourinary examination to dictate the surgical approach in a subset of urologic conditions (eg, penile cancer). Likewise, in a subset of discordant cases, changes in clinical course or updated imaging were shown to alter operative plans. By virtue of this approach, we hope to highlight to providers, insurers, and policymakers that surgical planning for new patients can take place virtually, hopefully improving access to urologic surgical care. Further work is needed to optimize video visit delivery, particularly within the context of pre-surgical planning.

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