Original Article on Surgical Management of Stress Urinary Incontinence in Men

The relationship between frailty, incontinence severity, and treatment decisions for men with post-prostatectomy stress urinary incontinence: a mixed methods analysis

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Contributions: (I) Conception and design: LA Hampson, NM Shaw; (II) Administrative support: None; (III) Provision of study materials or patients: LA Hampson; (IV) Collection and assembly of data: K Quanstrom, C Baussan, LA Hampson; (V) Data analysis and interpretation: NM Shaw, C Baussan, IE Allen, LA Hampson, D Dohan, CP Jones; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

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Background: Frailty is common among urology patients in general as well as among men seeking evaluation for stress urinary incontinence (SUI), with 6.1% of men undergoing artificial urinary sphincter placement considered frail. It is unclear if and how patient views on frailty and incontinence severity impact decision-making with regards to SUI treatment.

Methods: We undertook a mixed methods analysis to evaluate the intersection of frailty, incontinence severity, and treatment decision-making is presented. To do so, we utilized a previously published cohort of men undergoing evaluation for SUI at the University of California, San Francisco between 2015 and 2020, selecting those who had evaluation with timed up and go test (TUGT), objective measures of incontinence, and patient-reported outcome measures (PROMs). A subset of these participants had additionally undergone semi-structured interviews, and these interviews were re-examined to thematically code them with a focus on the impact of frailty and incontinence severity on SUI treatment decision-making.

Results: Among the original cohort of 130 patients, 72 had an objective measure of frailty and were included in our analysis; 18 of these individuals had corresponding qualitative interviews. Common themes identified included (I) impact of incontinence severity on decision-making; (II) the interaction between frailty and incontinence; (III) the impact of comorbidity on treatment decision-making; and (IV) age as a construct of frailty and impact on surgical choice and/or recovery. Direct quotations regarding each theme provides insight into patients' views and drivers of SUI treatment decision-making.

Conclusions: The impact of frailty on treatment decision-making for patients with SUI is complex. This mixed methods study highlights the variety of patient views on frailty with regards to surgical intervention for male SUI. Urologists should make a concerted effort to personalize patient counseling for SUI management and take time to understand each patient's perspective in order to individualize SUI treatment decision-making. More research is needed to help identify factors that influence decision-making for frail male patients with SUI.

Keywords: Frailty; incontinence; treatment decisions; prostatectomy

Submitted Jan 29, 2023. Accepted for publication Mar 28, 2023. Published online Apr 03, 2023.
doi: 10.21037/tau-22-839
View this article at: https://dx.doi.org/10.21037/tau-22-839

Introduction

Seventy percent of operations for male stress urinary incontinence (SUI) are performed in men 70 years of age and older, an important statistic given that it is known that surgical outcomes get worse with age (1,2). Often seen in older adults, frailty is a measure of physiologic vulnerability resulting from cumulative declines across multiple organ systems. While a standardized definition and measures of frailty are lacking, there are general domains which appear to contribute to the frailty phenotype. Fried's original frailty index, for example, takes into account nutritional status, weakness, diminished mobility, energy level, and physical activity (3). This type of complex of vulnerability may provide more insight into a patient's overall condition, especially given that frailty has been found to be associated with worse overall survival (3).

Frailty among urology patients has been found to be quite common; 45% of patients 65 years and older presenting to a nononcologic urology practice were either frail or pre-frail based on a timed up and go test (TUGT) (4). In addition, frailty has been found to be associated with common urologic conditions such as recurrent urinary tract infections, overactive bladder, male lower urinary tract symptoms, as well as associated with higher rates of complications among common urologic procedures (5-10). Among men seeking evaluation for SUI, in particular, one cohort study found that 22.3% are frail or pre-frail, with rates of frailty at 40% for those undergoing artificial sphincter placement (11). Another study using National Surgical Quality Improvement Program data showed that 6.1% of individuals undergoing AUS placement were frail, and 12.9% of those undergoing AUS removal were frail (12).

Given that frailty is common among this SUI population, it is important to understand if and how frailty plays a role in SUI treatment decision-making for patients. Qualitative methods in this setting allow for greater insight into the patient perspective, which cannot necessarily be gleaned from purely quantitative data. Understanding patients' views of the impact of frailty and incontinence severity on SUI decision-making is important to help guide improved treatment decisions to ensure that the patient voice is being incorporated in this process. To this end, herein we evaluate a subset of a previously published SUI cohort, employing mixed methodology to analyze participants with quantitative frailty data and qualitatively examine the relationship between frailty, incontinence severity and SUI treatment decisions from the patient's perspective (11). We hypothesize that frailty and medical comorbidity may lead men to avoid surgery even in the setting of high incontinence severity.

Methods

Study design and patients

Mixed methods analysis were employed to evaluate the intersection of frailty, incontinence severity, and treatment decision-making. Quantitative data were abstracted from a previously developed cohort of men ≥65 years of age who had undergone consultation for SUI at University of California San Francisco between 2015–2020. Participants who had quantitative measures of frailty with a TUGT were included in this analysis (n=72 out of an original cohort of 130). Among the 72 participants, a subset (n=18) had additionally undergone semi-structured interviews, and these interviews were re-examined to thematically code them with a focus on the impact of frailty and incontinence severity on SUI treatment decision-making. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). This study was approved by the Institutional Review Board at the University of California, San Francisco (17-23374, 19-28455), and informed consent was obtained from participants.

Quantitative data collection

Study participants' demographic, clinical and patient-reported outcome measures (PROMs) were abstracted from the previously published quantitative cohort (11). For this analysis, only those with complete objective data on frailty, number of pads per day, and treatment choice were included. TUGT was used to assess frailty, with 11–14 seconds representing pre-frail patients and ≥15 seconds representing frail patients (4). Incontinence was assessed using the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI-SF), a validated PROM (13). The overall score for this questionnaire ranges from 0 to 21, with higher scores representing more severe, bothersome incontinence.

Qualitative data collection

The qualitative interview included individuals who chose no surgical treatment, the artificial urinary sphincter

and male sling. Semi-structured interviews had been performed using an interview guide including topics of interest with prompts, allowing for significant patient-driven discussion points. Topics within the interview guide included: experience with incontinence, discussion of treatment options, treatment decision-making, surgical experience, and surgical outcomes (for those who elected surgical treatment). The primary objective(s) of the interviews were to understand the lived experience of men with SUI, to understand how men seek out and interpret information regarding treatment options, and ultimately make decisions about treatment for SUI. All interviews were conducted by trained study personnel (KQ, CB, LAH) via phone. All interviews were audio recorded and later transcribed into written transcripts.

Thematic analysis

After complete transcription of all interviews, four coders (NS, CB, IEA, LAH) read all transcripts for themes that emerged using Dedoose, an application for managing, analyzing, and presenting qualitative and mixed method research data (SocioCultural Research Consultants, LLC, Los Angeles, CA, USA). The initial coding scheme was derived from a first pass of all available transcripts with periodic review by all coders (14-17). Saturation of each treatment group was reached after 36 interviews. After identification of major themes, NS and LH re-coded the transcripts, comparing, discussing, and agreeing on each code throughout the transcripts. Codes were subsequently grouped to develop overarching topics and subtopics. Emergence of new codes or trends prompted a review of all transcripts for the same. After complete review a final qualitative expert (DD) was consulted to help with organization of themes. For this analysis, all interviews were thematically re-examined with a focus on the impact of frailty and incontinence severity on SUI treatment decision-making by LH. Dedoose was used to conduct mixed methods analysis to analyze the interplay between incontinence severity, frailty-related themes, and decision-making.

Results

Among the original cohort of 130 participants, 72 had complete objective data on frailty, number of pads per day, and treatment choice, and 18 of these individuals had corresponding qualitative interviews. Among the 72 participants subset, 33 chose no intervention, 11 underwent a sling procedure, and 28 underwent AUS placement (*Table 1*).

Correlation of the objective data with qualitative interviews allowed for insight into patients' reasoning for their treatment decisions. Specially, the relationship between frailty, severity of leakage, and treatment choice, demonstrated diverse treatment choices for men with similar levels of incontinence and/or frailty (*Figure 1*). Given the variability of treatment choice among these men demonstrated by the quantitative data, we looked to the qualitative interviews for thematic analysis of how incontinence severity and frailty impacted treatment decisions. These themes, with examples from participant interviews, are shown below.

Table 1 Relationship between treatment choice, incontinence, and frailty

Interview number	Treatment choice	Pads per day	TUGT (s)	ICIQ score
21	No intervention	1	6.0	11
	No intervention	4	7.4	13
	No intervention	1	11.0	Unavailable
	No intervention	3	8.9	12
	No intervention	2	8.0	13
28	No intervention	2	10.3	13
	No intervention	2	7.0	12
	No intervention	1	6.0	9

Table 1 *(continued)*

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Interview number	Treatment choice	Pads per day	TUGT (s)	ICIQ score
30	No intervention	2	8.0	15
	No intervention	2	9.0	6
	No intervention	1	9.0	7
	No intervention	8	7.0	19
	No intervention	9	8.0	20
	No intervention	5	9.0	14
	No intervention	2	10.0	14
	No intervention	1	6.5	4
	No intervention	1	10.0	15
	No intervention	3	9.3	Unavailable
	No intervention	1	9.0	13
	No intervention	1	10.0	19
	No intervention	1	8.0	Unavailable
	No intervention	1	14.0	7
	No intervention	1	9.0	Unavailable
	No intervention	3	16.0	11
	No intervention	1	7.0	11
	No intervention	8	11.0	Unavailable
19	No intervention	2	8.0	13
	No intervention	4	9.0	13
	No intervention	1	9.0	19
27	No intervention	3	8.6	18
	No intervention	5	9.0	6
	No intervention	1	7.5	9
	No intervention	5	11.0	12
18	Urethral sling	1	8.0	12
32	Urethral sling	4	9.0	17
	Urethral sling	3	9.6	16
14	Urethral sling	9	9.0	18
5	Urethral sling	2	6.0	9
23	Urethral sling	2	8.0	11
33	Urethral sling	4	8.0	21

Table 1 *(continued)*

Table 1 *(continued)*

Interview number	Treatment choice	Pads per day	TUGT (s)	ICIQ score
29	Urethral sling	5	7.0	21
	Urethral sling	2	10.0	Unavailable
	Urethral sling	3	5.0	21
	Urethral sling	10	12.0	Unavailable
	Artificial urinary sphincter	5	8.0	19
	Artificial urinary sphincter	2	9.8	Unavailable
	Artificial urinary sphincter	2	8.0	15
	Artificial urinary sphincter	7	8.0	21
	Artificial urinary sphincter	4	8.0	16
	Artificial urinary sphincter	3	10.0	15
	Artificial urinary sphincter	6	10.0	Unavailable
11	Artificial urinary sphincter	10	8.0	15
36	Artificial urinary sphincter	5	9.0	20
	Artificial urinary sphincter	5	12.0	21
	Artificial urinary sphincter	3	11.0	15
	Artificial urinary sphincter	2	8.0	13
35	Artificial urinary sphincter	2	12.2	11
	Artificial urinary sphincter	3	8.0	11
	Artificial urinary sphincter	4	8.0	Unavailable
	Artificial urinary sphincter	8	11.0	19
	Artificial urinary sphincter	2	14.0	8
	Artificial urinary sphincter	10	8.4	Unavailable
	Artificial urinary sphincter	2	7.0	Unavailable
6	Artificial urinary sphincter	5	11.0	Unavailable
	Artificial urinary sphincter	8	7.0	Unavailable
	Artificial urinary sphincter	3	9.0	Unavailable
16	Artificial urinary sphincter	6	7.0	18
17	Artificial urinary sphincter	10	9.0	16
	Artificial urinary sphincter	5	7.0	Unavailable
	Artificial urinary sphincter	3	16.0	19
	Artificial urinary sphincter	4	12.0	18
	Artificial urinary sphincter	3	9.1	14

TUGT, timed up and go test; ICIQ, International Consultation on Incontinence Questionnaire.

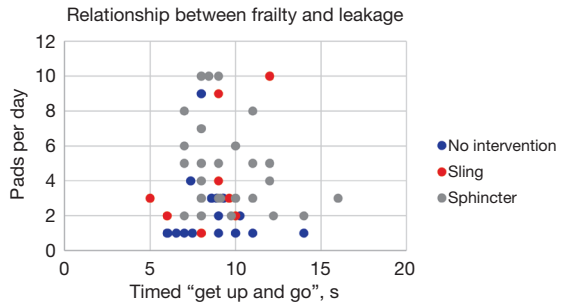

Figure 1 Relationship between frailty and pads per day.

Impact of incontinence severity on decision-making

The severity and impact of incontinence factored heavily into participants' decisions regarding surgical intervention for incontinence. For some participants, degree of incontinence alone played the most important role. One participant, who chose not to pursue surgery, stated: "*If I had a constant problem, I would definitely consider surgery. I mean if it was to the point where I would wear a diaper 24 hours a day—as I did afterward with the catheter, etc.—yeah I would definitely consider surgery. But I would try other therapies prior to that—all the other available therapies.*"

Others focused more on the impact incontinence had on their quality of life. "*And then (the incontinence) got to where it came out most of the time where I had to stay home… All my social life—I could not have any. I could not go out and play dominoes. I could not visit my friends. I couldn't go to a baseball game. I couldn't go anywhere. I had to stay home. That's what I did…*" (Interview 6). For some, this impact was so significant that they wanted a treatment solution no matter what: "*Yeah, if you'd have said, 'There was a 55% chance you'd die on the table,' I would have gone ahead with it anyway.*" (Interview 16).

Interaction between frailty and incontinence

The interplay between incontinence and frailty also came to light in the interviews, with some participants viewing incontinence as a contributing factor to frailty, describing this concept as disabling, feeling vulnerable, or holding one back. "*It totally affected my life. I didn't want to go out, I couldn't do anything. So, it was very disabling for me, being incontinent.*" (Interview 11). Another individual put it this way: "*(Incontinence) impacts your life more than you know until you start doing stuff. If you just sit on your butt and watch TV all day and drink beer then you're good, you have no worries. But if you want to go out on the lake, if you want to try wake surfing, or if you want to do something else, it limits what you can do easily. It really limits your life… It absolutely holds you back.*" (Interview 21).

Many noted that a major impact of the incontinence was on their activity levels, often leading them to decrease their physical activity which can lead to or be correlated with frailty. "*I live in ***, I'm very active with my dog and on the beach. I couldn't even get a walk in… I couldn't get a brisk walk in without thinking about going up into the sand dunes to take a leak.*" (Interview 36). Another noted: "*I used to race—I'm a cyclist—and I raced. Well you're not riding a bicycle wearing a diaper, I'll tell you… It just changes your life when that happens all of a sudden.*" (Interview 33). Excerpts show not only the decrease in activity related to incontinence, but also the fact that these were often activities which people loved doing. "*I am pretty active. One thing is my wife and I have done lots in the past is a lot of walking, walking vacations here and abroad. So when I found or did find was that if I have a very active day of walking, for example, then I was almost certainly require a couple of pads… Well, as I said, I enjoyed walking; I certainly cut back on the amount of walking I did.*" (Interview 5).

Impact of comorbidity on treatment decision-making

Interestingly, very few participants mentioned or focused on their comorbidities when it came to their treatment decisions, even when prompted. A good example of this was when one participant who had previously mentioned that he had Parkinson's disease was asked about the role of Parkinson's in his decision-making: "*(Moderator): when we spoke last you had talked about Parkinson's. Did that have any—or any medical condition—have any role in your decision? [23]: No, not at all.*" (Interview 23).

Age as a construct of frailty and impact on surgical choice and/or recovery

Many participants thought about frailty as it related to their age. Some seemed to consider their age as a proxy for frailty when making a decision to undergo surgery: "*At the time, I was still a young 72-year-old and in really good shape for my age. I should have come out (of prostate cancer surgery) better than anybody: I wasn't overweight, I was in pretty good shape, I was pretty youthful, I had no other illnesses, I'm very active, it was all fine… (When it came to the incontinence surgery,) I thought I should do that, and I was still young at the time. I was still just like 73. And somehow, I thought I could make it through a couple surgeries.*" (Interview 29).

Others considered how their age, and by extension frailty, impacted their recovery from surgery: "*Well, the surgery went well… Obviously, I'm getting older, so it took me a while to get over that.*" (Interview 11). Age also played a role for some in thinking about the risks of undergoing anesthesia and the potential impacts on memory: "*I have a good MD friend of mine, and he and I had been designing artificial heart left ventricular assist devices (LVADs) for years and years, and he's a very famous MD and inventor and he's invented a lot of LVADs… He avoids going under for whatever reason, because it's not good for your memory and dementia. He said, 'Every time you go under, you stand a chance coming out not as good as you were before.' And I thought 'How many times do I want to go under and have a major surgery?' It's always impacted how I think about going under again.*" (Interview 29).

Several participants made a distinction between age and frailty when it came to SUI treatment decision-making, noting that age in and of itself does not necessarily correlate with frailty. "*Bear in mind that I'm approaching 90 but people think I'm 60. But I'm in pretty good shape, I think I could withstand an operation if I had to.*" (Interview 18). Another stated: "*A lot of people my age, I used to see people in their 60's and they're wrecks. They don't walk, they don't really go out and do anything, they can't walk the dog, they've got their little walking stick, but I'm not that person. If you were that person and were only leaking a couple pads a day, you'd be happy as a clam because you're not really doing very much. But I'm revisiting my architecture career, I'm out measuring houses, and I expect to do that until I can't do that anymore.*" (Interview 29).

Holistic view of SUI treatment decision-making

One participant eloquently commented on the fact that there are several factors that impact treatment decision-making that relate to frailty, including age, physical activity, and overall health. Ultimately, he emphasized that this is an individualized choice that needs to take all of these factors into account. "*I wouldn't recommend one or the other because it's very personal—depends on your age, what you're doing, and what you want to do, and all those things go into that… Maybe that's one of the questions they should ask people: What do you plan on doing? Are you going to travel? Are you going to quit working? Are you going to retire and sit and read books? This really depends on the decisions people make.*" (Interview 29).

Discussion

This mixed methods study provides unique insight into how frailty and SUI are inescapably intertwined. We see that treatment decisions have much more complex underpinnings than simply frailty or degree of incontinence alone. For example, one patient may view frailty as a reason to avoid procedural intervention, while another views incontinence as a contributing factor to frailty. These patients may have similar clinical scenarios, but their views on management are vastly different. This complex linkage between frailty and incontinence highlights the need for counseling sessions tailored to the goals of each individual patient.

Data show that frailty is an important predictor of urologic complications despite age and across common urologic procedures, belying the importance to understand how frailty influences SUI treatment (5). One study using National Surgical Quality Improvement Program (NSQIP) data showed that frailty—and not age—is associated with major complications of AUS placement and removal procedures [adjusted odds ratio (aOR), 3.5; 95% confidence interval (CI), 1.2–9.9], while another (also using NSQIP data) showed no difference in 30-day complications associated with frailty or increasing comorbidities for artificial urethral sphincter (AUS) or sling (12,18). Frail women undergoing sling procedures have been found to have higher risk of 30-day complications and 1-year mortality (19). Though this study is not directly applicable to the male SUI population, it does highlight the impact of frailty on incontinence procedure outcomes. Overall, it is clear that frailty plays an important role, suggesting that frailty should be evaluated and frail patients should be optimized if they are undergoing an incontinence procedure. Furthermore, frail patients should be counseled on the increased risk of complications even those who may otherwise appear to be favorable surgical candidates.

Our own qualitative findings show that frailty and incontinence can be intertwined, with incontinence influencing perceptions of frailty, and frailty influencing treatment choice. This finding is supported by quantitative studies, which have shown that men with lower urinary tract symptoms are more likely to be frail, and that the prevalence of frailty is higher in patients with moderate or severe lower urinary tract symptoms compared to those with no or mild symptoms (6,20). Regarding urinary incontinence in particular, a 2018 meta-analysis found a higher prevalence of urinary incontinence in frail individuals compared to those who were considered non-frail (39% *vs.* 19%) (21). Incontinence has also been found to be associated with poor self-rated health in elderly populations (though this

association was weaker in patients with activities of daily living impairment) (22).

This study does have limitations in that is relatively small in scope and primarily qualitative in nature. The views expressed by this cohort of patients may not be shared by patients in other geographic locations, socioeconomic classes, or cultures. Despite these limitations, we believe it is important to provide qualitative data that is necessary to represent the patient perspective through their own voices. The results of our study provide a window into the patient viewpoints that may underlie these larger, population-based studies. Insights into patient perspectives, in combination with quantitative data about surgical outcomes in frail populations, may allow for more nuanced patient counseling and more complete informed consent prior to treatment decisions.

Conclusions

The impact of frailty on treatment decision-making for patients with SUI is complex. This study highlights the variety of patient views on frailty with regards to surgical intervention for male SUI. Urologists should make a concerted effort to personalize patient counseling for SUI management and take time to understand each patient's perspective in order to individualize SUI treatment decision-making. More research is needed to help identify factors that influence decision-making for frail male patients with SUI.

Acknowledgments

Funding: This study was supported by the National Institute on Aging GEMSSTAR 1R03AG064372-01 (PI: Hampson); NIH/NIDDK K12K083021 (funding: Hampson); Doris Duke Charitable Foundation CTSI-UL1 TR001872 (PI: Hampson); Claude D. Pepper Older Americans Independence Center UCSF Research Education Component Scholar Award (PI: Hampson); and San Francisco Veterans Affairs Medical Center (Hampson, Cooperberg, Walter).

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Translational Andrology and Urology* for the series "Surgical Management of Stress Urinary Incontinence in Men". The article has undergone external peer review.

Data Sharing Statement: Available at https://tau.amegroups.com/article/view/10.21037/tau-22-839/dss

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://tau.amegroups.com/article/view/10.21037/tau-22-839/coif). The series "Surgical Management of Stress Urinary Incontinence in Men" was commissioned by the editorial office without any funding or sponsorship. BNB reports that Boston Scientific provides partial funding for the Reconstructive Urology fellowship for which he is the Program Director. LAH served as the unpaid Guest Editor of the series, and she reports that she has spoken and consulted on behalf of Boston Scientific. Boston Scientific is the manufacturer of the artificial urinary sphincter device and urethral sling discussed in this paper. The authors have no other conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). This study was approved by the Institutional Review Board at the University of California, San Francisco (17-23374, 19-28455) and informed consent was obtained from participants.

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Cite this article as: Jones CP, Shaw NM, Mena J, Breyer BN, Walter LC, Baussan C, Quanstrom K, Allen IE, Dohan D, Hampson LA. The relationship between frailty, incontinence severity, and treatment decisions for men with post-prostatectomy stress urinary incontinence: a mixed methods analysis. Transl Androl Urol 2023;12(5):840-848. doi: 10.21037/tau-22-839

