Can double J stent complications be reduced in pediatric patients?

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ABSTRACT

Objective. The use of double J (DJ) stents is frequent in urological pediatrics, but it is not exempt from morbidity. The objective of this study was to describe the risk factors (RF) of DJ complications in pediatric patients, and to analyze the quality of the information provided to the families with respect to the stent.

Materials and methods. A retrospective study of patients undergoing surgery with DJ placement in the urology department from 2017 to 2022 was carried out. Study patients were divided into two groups –complicated (C) and non-complicated (NC). A multivariate analysis was performed to identify complication-related RFs, and a quality analysis as perceived by the families was conducted by means of a satisfaction survey (0 = total dissatisfaction; 10 = maximum satisfaction).

Results. 180 patients were included (236 DJs). The main diagnoses included renal transplantation (29.8%), ureteropelvic stenosis (26%), and urolithiasis (20.7%). Complication rate was 21.9%, with a mean comprehensive complication index (CCI) of 26.8. Prophylactic antibiotic therapy was not associated with fewer complications (97.3% vs. 98.1%; p=0.727). Complication RFs included more than one stent (p<0.001; OR=6.628) and bilateral placement (p<0.05; OR=4.871). Poor registration in the medical records was associated with greater complications (p=0.025). In the information quality survey, 20% reported a score lower than 7/10.

Conclusions. DJ-associated morbidity has a direct relationship with DJ duration, bilaterality, and carrying more than one stent in a lifetime. Adequate registration in the medical records is associated with shorter DJ duration, and therefore, fewer complications. Antibiotic prophylaxis did not reduce complications, which means its routine use should be reconsidered.

KEY WORDS: Urinary stents; Risk factors; Complications; Quality of life; Health information exchange.

¿PODEMOS REDUCIR LAS COMPLICACIONES DE DOBLE J EN EL PACIENTE PEDIÁTRICO?

RESUMEN

Objetivos. El uso de catéteres doble J (DJ) es un proceso frecuente en uropediatría, pero no exento de morbilidad. El objetivo de nuestro estudio es describir factores de riesgo (FR) de complicación de los DJ en pacientes pediátricos y comprobar la calidad de la información transmitida a las familias en relación al catéter.

Material y métodos. Estudio retrospectivo de pacientes intervenidos en urología con colocación de DJ (2017–2022). Grupos a estudio: complicados (CC) y no complicados (SC). Realizamos un análisis multivariante para identificar FR relacionados con complicaciones y un análisis de calidad percibida por las familias mediante encuesta de satisfacción (0 no satisfacción, 10 máxima satisfacción).

Resultados. Incluimos 180 pacientes, (236 DJ). Diagnósticos principales: trasplante renal 29,8%, estenosis pieloureteral 26%, y urolitiasis 20,7%. La tasa de complicaciones fue del 21,9%, con un Comprehensive Complication Index (CCI) medio de 26,8. La antibioterapia profiláctica no se relaciona con menos complicaciones (97,3% *vs* 98,1% p=0,727). FR de complicación: acumular más de un catéter (p<0,001, OR 6,628) o la colocación bilateral (p<0,05; OR 4,871). Un mal registro en la historia clínica se relacionó con más complicaciones (p=0,025). En la encuesta de calidad de información recibida, el 20% reflejaron una puntuación inferior a 7/10.

Conclusiones. La morbilidad asociada al DJ se relaciona con su duración, la bilateralidad o acumular más de un catéter. Su adecuado registro en la historia clínica se relaciona con menor duración del mismo y, por tanto, menos complicaciones. La profilaxis antibiótica no ha demostrado disminuir las complicaciones, su uso rutinario debe ser revalorado.

PALABRAS CLAVE: Catéteres urinarios; Factores de riesgo; Complicaciones; Calidad de vida; Información clínica.

INTRODUCTION

The double J stent (DJ) is a key instrument in urological pediatrics. It is used in pyeloplasty, ureteral reimplantation, or lithotripsy, among others[1].

DJ placement and removal are conducted on an outpatient basis. However, the procedure is not exempt from

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complications or morbidity, since it is a foreign body implanted. Complications include calcification, migration, pain, and hematuria[2]. Such complications may alter quality of life as they impact the patient's general situation or may require prophylactic antibiotic therapy, serial examinations, or a greater number of procedures[3].

Adequately registering DJ data, appropriate follow-up, and the quality of the information provided to the families have been associated with stent morbidity[3,4]. However, there are still few studies analyzing the association between the information received by the families and the rate of complications associated with these stents. Therefore, the primary objective of this work was to assess the most frequent DJ complications and the risk factors associated. The secondary objective was to evaluate the impact of DJ on patients' quality of life, as well as to determine whether the quality of the information received is associated with fewer complications.

MATERIALS AND METHODS

A retrospective cohort study of pediatric patients undergoing surgery in our institution and requiring DJ placement from 2017 to 2022 was carried out.

Patient medical records were reviewed from stent placement to removal. They were classified into two groups according to whether they had complications or not (complications = C; no complications = NC).

Inclusion criteria: care process entirely managed by the pediatric urology team in our institution; informed consent gathered from the families for study participation; all variables required registered in the medical records.

Demographic variables, variables associated with surgery and with subsequent registration in the medical records, and complications occurring following DJ placement were collected. Patient morbidity was classified according to the comprehensive complication index (CCI), which is correlated with Clavien-Dindo classification (CDC), with CDC I being a CCI of 8.7%, CDC II being a CCI of 20.9%, CDC IIIa being a CCI of 26.2%, CDC IIIB being a CCI of 33.7%, CDC IVa being a CCI of 42.4%, CDC IVb being a CCI of 46.2%, and CDC V being a CCI of 100%. <42.4% CCI was regarded as mild morbidity[5-8].

In addition, a survey among the families of the patients requiring DJ placement in the last two years (2021 and 2022) was conducted. The survey was not carried out among patients who received DJ prior to 2021 to avoid information bias. The survey was drafted in our institution based on two validated scales –the Flanagan Quality of Life Scale (QOLS)[3,9] and the AIM Quality (AIMQ) scale[10]. The survey was meant to assess the information received in the pre- and peri-operative period of the DJ placement procedure, quality of life when carrying the stent, and overall satisfaction with the whole process (Appendix 1).

All data was registered in a Microsoft EXCEL® database and analyzed using the IBM SPSS Statistics® software, version 24. A descriptive analysis of the variables collected in the study was first performed. Quantitative variables were expressed as mean, whereas qualitative variables were expressed as absolute value and percentage. All variables collected were compared between the two study groups. The comparison of quantitative variable means was carried out using Student's t-test or Mann-Whitney's U test. The association of qualitative variables was calculated by means of the Chi-squared test or Fisher's test. Kaplan-Meier's test was used to analyze complication-free survival. Finally, a multivariate logistic regression model was employed to detect complication-independent risk factors.

RESULTS

A total of 236 DJs were placed in 180 patients during the study period. Mean DJ duration was 60.2 days (range: 0-1,062), mean number of stents per patient was 1.31 (r: 1-5), and the most widely used prophylactic antibiotic was trimethoprim-sulfamethoxazole (70.3%). The remaining social and demographic data is featured in Table 1.

Complications occurred in 24.8% of the stents placed, with a mean of 0.3 complications per patient (r: 0-3). The most frequent complication was UTI (48.1%), followed by migration (13.5%) and pain (11.5%), pyelonephritis (9.6%), calcification and hematuria (5.8%), urinary obstruction (3.8%), and hematoma (1.9%). Mean CCI was 26.87 (r: 9-42.4), and it was ranked as mild (<42.4%) in 93.6% of the cases.

The most frequent reason for stent removal was end of treatment (Table 1).

Stent placement and characteristics were documented on the operating sheet in 78.7% of the cases. Placement only was documented in 15.7% of the cases, and nothing was documented in 5.5% of the cases. Regarding the discharge report, placement was documented in 85.1% of the cases. Before discharge, 39.1% of the patients were included in the waiting list for subsequent stent removal.

Table 2 features a comparison of the different variables analyzed between the C and NC groups. Patients with a larger number of stents placed in their lifetime and bilateral placement in the same surgery were significantly associated with greater complications. Conducting surgery through the endourological technique, along with the presence of lithiasis, significantly increased complications, as well as the absence of adequate registration in the discharge report. However, prophylactic antibiotic therapy was not associated with fewer complications (97.3% vs. 98.1%; p=0.727).

Table 1. Social and demographic analysis.

Item	*Frequency*
Age	6.38 years (r: 0-17.83)
Sex:	
- Male	61.3% (144)
- Female	38.7% (91)
Reason for placement:	
- Renal transplantation	30.6% (72)
- Ureteropelvic stenosis	26.8% (63)
- Renal lithiasis	21.3% (50)
- Megaureter	9.5% (22)
- Vesicoureteral reflux	8.5% (20)
- Other	3.4% (8)
Placement method:	
- Open	50.6% (119)
- Cystoscopy	39.6% (93)
- Laparoscopy	9.8% (23)
Laterality:	
- Right	52.3% (123)
- Left	42.1% (99)
- Bilateral	5.5% (13)
DJ type:	
- 4.7 Fr	43.4% (102)
- 3 Fr	23.4% (55)
- Magnetic	10.4% (24)
- 6 Fr	0.4% (1)
- Unspecified	22.6% (53)
Prophylactic antibiotic therapy:	97.4%
- Septrin	70.2% (160)
- Amoxicillin/clavulanic acid	18.9% (43)
- Fosfomycin	6.1% (14)
- Cefixime	2.2% (5)
- Trimethoprim	1.3% (3)
- Other	1.6% (3)
Mean DJ duration	60.2 days (r: 0-1092)
Mean DJs/patient	1.31 (r: 1-5)

Item	*Frequency*
Complications:	24.8% (60)
- Urinary infection with fever	48.1% (12)
- Migration	13.5% (7)
- Pain	11.5% (6)
- Pyelonephritis	9.6% (5)
- Calcification	5.8% (3)
- Hematuria	5.8% (3)
- Obstruction	3.8% (2)
- Hematoma	1.9% (1)
Reason for removal:	
- End of treatment	80.4% (189)
- Replacement	8.1% (19)
- Infection	5.1% (12)
- Pain	2.6% (6)
- Obstruction	1.3% (3)
- Migration	1.3% (3)
- Graft rejection	0.9% (2)
- Calcification	0.4% (1)
Place of removal:	
- Operating room	91% (212)
- Consultation	9% (21)
Placement registered at surgical hospitalization:	
- Presence and type	76.7% (185)
- Presence	15.3% (37)
- Nothing	5.4% (13)
Placement registered at discharge	82.6% (200)
Removal registered at surgical hospitalization:	
- Presence and type	5.4% (13)
- Presence	84.3% (204)
- Nothing	5.8% (14)
Removal registered at discharge	88.4% (214)
Waiting list inclusion	38% (92)

Although not statistically significant, mean stent duration was higher in the C group (C: 70.17 days; NC: 57.91 days; p=0.324). In addition, the occurrence of complications was constant and progressive in time (Fig. 1). On the other hand, patients documented to be carrying a DJ in the discharge report and patients included in the waiting list prior to discharge carried the stent for fewer days (56.39 vs. 85.47; p=0.071; 49.53 vs. 70.10; p=0.08).

Using the univariate model, all statistically significant variables, as well as those variables clinically relevant for this work (p>0.05 and <0.25), were selected for multivariate analysis purposes. Carrying more than one double J stent in a lifetime, bilateral placement in the same surgery, and carrying the stent for 90-120 days were independent risk factors for the presence of increased complications. Patients carrying two or more double J stents had a 6.6-fold risk of complications vs. those carrying only one (p<0.001; OR 6.628). Patients undergoing bilateral stent placement in the same procedure had a 4.8-fold risk of complications vs. patients undergoing unilateral placement (p<0.05; OR 4.871). Finally, patients carrying a stent for 90-120 days had a 6.1-fold risk of complications vs. patients carrying the stent for less than 90 days or more than 120 days (p<0.05; OR: 6.107) (Table 3).

Finally, the survey was conducted in 47 patients. In all satisfaction and family information related questions, negative replies were predominant in the C group (Appendix 2).

Table 2. Comparison between NC and C.

Item	*NC*	*C*	*p*
Sex			0.354
- Male	59.7% (108)	66.7% (36)	
- Female	40.3% (73)	33.3% (18)	
Age (years)	6.55	5.79	0.333
Diagnosis			<0.05
- Lithiasis	38.8% (19)	61.2% (30)	
- Other diagnoses	18.4% (34)	81.6% (151)	
DJ type			0.912
- 3 Fr	24.2% (44)	20.8% (11)	
- 4.7 Fr	42.3% (77)	47.2% (25)	
- Magnetic	10.4% (19)	9.4% (5)	
- 6 Fr	0.5% (1)	0% (0)	
Laterality			<0.05
- Unilateral	21.3% (47)	78.7% (174)	
- Bilateral	46.2% (6)	53.8% (7)	
Method			0.072
- Endourology	30.1% (28)	69.9% (65)	
- Surgery	17.6% (25)	82.4% (117)	
Placement registration at discharge			<0.05
- Yes	87.9% (160)	75.5% (40)	
- No	12.1% (22)	24.5% (13)	
Registration at waiting list			0.590
- Yes	40.7% (74)	34% (18)	
- No	57.1% (104)	62.3% (33)	
- Not required	2.2% (4)	3.8% (2)	
Prophylactic antibiotic therapy			0.727
- Yes	97.3% (177)	98.1% (52)	
- No	2.7% (5)	1.9% (1)	
DJ duration	57.19	70.17	0.327
Mean DJs/patient	1.22	1.67	<0.05

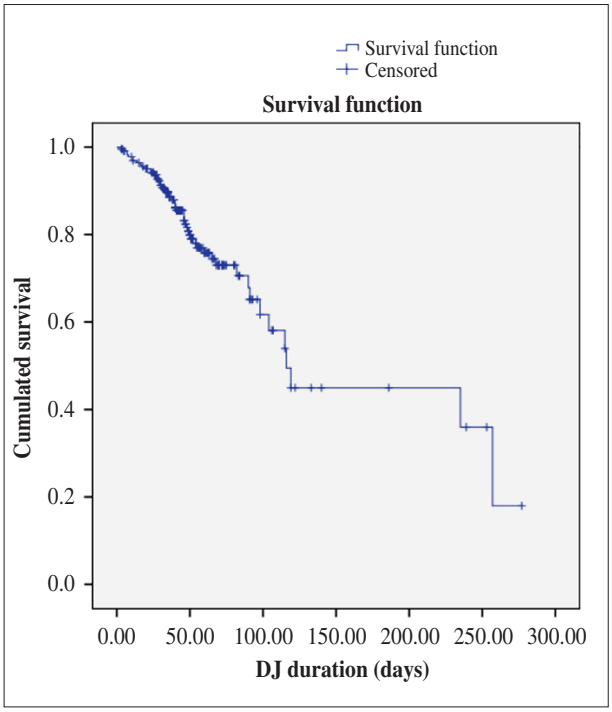

Figure 1. Survival curve. The presence of complications was progressive throughout the study period.

DISCUSSION

Double J stents are widely extended in pediatric urology, and they have become an indispensable tool. The complications described in our study are in line with those from other studies such as Geavlete et al.'s[2], which described their experience with 50,000 procedures, reporting complications such as urinary infection in 14.8% of the cases, stent migration in 1.5%, and irritative urinary symptoms in 32%.

In multiple studies, such as Abdelaziz et al.'s[11] from 2018, stent duration is correlated with the emergence of complications. In our case, there were no statistically significant differences, but mean duration was higher in the C group. In addition, other works, such as Kim et al.'s[4] from 2021, associate the poor registration of DJ use in the medical records with greater complications. This is consistent with our study, where inadequate –typically forgotten– registration was associated with increased

Table 3. Multivariate analysis: independent complication risk factors.

Complication RFs	*B*	*ET*	*p*	*OR*	*95% CI (OR) (lower; higher)*
>1 DJ	1.891	0.494	<0.001	6.628	(2.516 ; 17.458)
Pathology: lithiasis	0.252	0.677	0.710	1.286	(0.341 ; 4.849)
Bilateral stent	1.583	0.712	<0.05	4.871	(1.206 ; 19.675)
Inadequate registration at discharge	-0.042	0.623	0.946	.959	(0.283 ; 3.253)
Endourological procedure	0.093	0.558	0.868	1.097	(0.367 ; 3.278)
Carrying the stent for 90-120 days	1.809	0.832	<0.05	6.107	(1.196 ; 31.184)
Constant	-3.376	1.310	0.010		

complications. Based on our results, the lack of information and adequate registration seemingly expands double J stent exposure times, which in turn increases the possibility of developing complications. Additionally, the survey confirms there is a non-neglectable percentage of families who believe the information was not appropriate. Therefore, similarly to Kim et al.[4] in 2021, we suggest the registration system is improved, and DJ patients are closely monitored.

The characteristics of the double J stent once in place and its laterality are not correlated with greater complications per se, but they are associated with diagnosis. This was described by Leslie et al.[12], who compared the DJ placement methods available in 2022. Of all diagnoses analyzed in our study, lithiasis was the one associated with greater complications.

In our study, endourological placement was correlated with greater complications vs. conventional surgery –both open and laparoscopic. Urinary tract manipulation through cystoscopy involves a non-neglectable percentage of secondary urinary infections. However, the difference in the number of complications vs. traditional surgery has not been described in the literature so far. In a 2019 study, Lin T et al.[13] reported that endourologically placed DJs pose greater risks of being forgotten. Our work demonstrates that poor registration and secondary oversight are indirectly associated with increased complications. It also reveals that DJs placed as a result of lithiasis also pose greater risks of being forgotten.

Carrying a bilateral DJ or more than one DJ in a lifetime is a risk factor vs. patients carrying a unilateral/single DJ. These results had barely not been revealed in the literature so far.

Regarding antibiotic prophylaxis in DJ patients, the literature remains controversial. Most groups support the routine use of antibiotics, claiming that DJs are foreign devices and therefore could favor bacterial colonization. However, our results demonstrate that higher risks of complications are irrespective of the antibiotic prophylaxis administered. Consequently, the routine use of these drugs should be analyzed in new studies so that the actual benefits are shown.

Similarly to Scarneciu I and Lupu S et al.'s 2015 article on ureteral stent morbidity and impact[3], the satisfaction and quality of life surveys among DJ patients available in the literature demonstrate that the symptoms secondary to double J stent (pain, infections, hematuria...) are the ones that mostly interfere with daily life. In our sample, a trend towards greater complications was noted in patients who reported not to be completely satisfied with the information received. However, since this was a retrospective survey, patients with stent complications may have responded in a more negative manner as a result of their dissatisfaction with the procedure. Even so, these results should encourage us to improve registration in medical records, as well as to enhance the quality of the information and the way children and their families are treated. Such improvement in terms of information could help reduce complications secondary to the use of DJ.

In general, although DJ-related complications have profusely been described in the literature, there are few articles analyzing the risk factors associated with them.

In conclusion, DJ complications are related to stent duration, bilaterality, or carrying more than one stent in a lifetime. Adequate stent placement registration in medical records has been associated with shorter stent duration, which in turn causes fewer complications. Therefore, the strategy should be aimed at improving the information and registration of our patients. In addition, the administration of antibiotic prophylaxis has not demonstrated to decrease complications secondary to the use of DJ, which means its routine use should be reconsidered.

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Appendix 1. Family information and overall satisfaction assessment survey.

1. What's your relationship with the patient?
   - 1 I am the patient
   - 2 Mother
   - 3 Father
   - 4 Grandmother
   - 5 Grandfather
   - 6 Another relative or legal guardian

2. Can we gather your oral consent for this survey on the quality of the double J stent care process?
   - 1 Yes
   - 2 No

3. How old are you?
   - ..... years old

4. Before the procedure, were you **informed** of the double J stent **placement** process?
   - 1 I received all the information required
   - 2 I received much information
   - 3 I received some information
   - 4 I received very little information
   - 5 I received no information at all

5. Before the procedure, were you **informed** of the double J stent **removal** process?
   - 1 I received all the information required
   - 2 I received much information
   - 3 I received some information
   - 4 I received very little information
   - 5 I received no information at all

6. On the day the double J stent was placed, were you satisfied with the **way you were treated** by doctors and nurses?
   - 1 I was completely satisfied
   - 2 I was highly satisfied
   - 3 I was neither satisfied nor dissatisfied
   - 4 I was very little satisfied
   - 5 I was not satisfied at all

7. On the day the double J stent was placed, are you satisfied with **the way doctors and nurses explained to you how the procedure had worked out**?
   - 1 I was completely satisfied
   - 2 I was highly satisfied
   - 3 I was neither satisfied nor dissatisfied
   - 4 I was very little satisfied
   - 5 I was not satisfied at all

8. On the day the double J stent was placed, were you informed by your doctor of the **potential complications of carrying a stent** in an easy manner?
   - 1 I received all the information required
   - 2 I received much information
   - 3 I received some information
   - 4 I received very little information
   - 5 I received no information at all

9. On the day the double J stent was placed, were you informed by your doctor of the **need for stent removal** in a second step?
   - 1 I received all the information required
   - 2 I received much information
   - 3 I received some information
   - 4 I received very little information
   - 5 I received no information at all

10. On the day the double J stent was placed, were you informed by your doctor of the stent's **removal procedure** in a second step?
    - 1 I received all the information required
    - 2 I received much information
    - 3 I received some information
    - 4 I received very little information
    - 5 I received no information at all

11. **Instructions at discharge** include monitoring symptoms following the procedure, instructions on medicines and at-home care, and the need for stent removal in a second step. Before leaving hospital, were you provided with written instructions at discharge?
    - 1 Yes
    - 2 No
    - 3 Does not know/refuses to answer

12. When carrying the stent, did you have any of **these symptoms**?
    - 1 Pain
    - 2 Bloody urine
    - 3 Voiding difficulty or discomfort
    - 4 None
    - 5 Other (please specify)

13. The patient could lead a **normal life** while carrying the double J stent. From 1 to 5, to what extent do you agree with that? (5 = completely normal life)
    - .....

14. From **0 to 10, how uncomfortable** was it for the patient to carry the stent? (0 = no uncomfortable at all // 10 = highly uncomfortable)
    - .....

15. Before stent removal, **were you contacted again**, either in person or by telephone, to **inform you of the removal** of the stent?
    - 1 Yes
    - 2 No
    - 3 Does not know/refuses to answer

16. Before stent removal, did you have to **make an appointment yourself** for the removal of the stent?
    - 1 Yes
    - 2 No
    - 3 Does not know/refuses to answer

17. From 1 to 10, **how satisfied are you with the whole process** since the stent was placed? How satisfied are you with the information provided, with the period during which the patient was carrying the stent, with the removal process, and with the resolution of it?
    - .....

Appendix 2. Comparison of the satisfaction survey between groups.

Item	*Total*	*NC*	*C*	*p*
Q4. Before the procedure, were you **informed** of the double J stent **placement** process?				
• 1 I received all the information required	32	28 (82.8%)	8 (80%)	
• 2 I received much information	5	3 (10.3%)	2 (20%)	0.641
• 3 I received some information	1	1 (3.4%)	0	
• 4 I received very little information	0	0	0	
• 5 I received no information at all	1	1 (3.4%)	0	
Q5. Before the procedure, were you **informed** of the double J stent **removal** process?				
• 1 I received all the information required	36	27 (93.1%)	9 (90%)	
• 2 I received much information	1	1 (3.4%)	0	0.271
• 3 I received some information	1	0	1 (10%)	
• 4 I received very little information	0	0	0	
• 5 I received no information at all	1	1 (3.4%)	0	
Q6. On the day the double J stent was placed, were you satisfied with the **way you were treated** by doctors and nurses?				
• 1 I was completely satisfied	36	27 (93.1%)	9 90%)	
• 2 I was highly satisfied	2	2 (6.9%)	0	0.141
• 3 I was neither satisfied nor dissatisfied	0	0	0	
• 4 I was very little satisfied	0	0	0	
• 5 I was not satisfied at all	1	0	1 (10%)	
Q7. On the day the double J stent was placed, are you satisfied with **the way doctors and nurses explained to you how the procedure had worked out**?				
• 1 I was completely satisfied	36	28 (96.6%)	8 (80%)	0.099
• 2 I was highly satisfied	1	1 (3.4%)	0	
• 3 I was neither satisfied nor dissatisfied	1	0	1 (10%)	
• 4 I was very little satisfied	1	0	1 (10%)	
• 5 I was not satisfied at all	0	0	0	
Q8. On the day the double J stent was placed, were you informed by your doctor of the **potential complications of carrying a stent** in an easy manner?				
• 1 I received all the information required	28	21 (72.4%)	7 (70%)	
• 2 I received much information	2	2 (6.9%)	0	0.260
• 3 I received some information	6	4 (13.8%)	2 (20%)	
• 4 I received very little information	2	2 (6.9%)	0	
• 5 I received no information at all	1	0	1 (10%)	
Q9. On the day the double J stent was placed, were you informed by your doctor of the **need for stent removal** in a second step?				
• 1 I received all the information required	38	29 (100%)	9 (90%)	
• 2 I received much information	0	0	0	0.084
• 3 I received some information	0	0	0	
• 4 I received very little information	1	0	1 (10%)	
• 5 I received no information at all	0	0	0	
Q10. On the day the double J stent was placed, were you informed by your doctor of the stent's **removal procedure** in a second step?				
• 1 I received all the information required	36	28 (96.6%)	8 (80%)	
• 2 I received much information	2	1 (3.4%)	1 (10%)	0.175
• 3 I received some information	0	0	0	
• 4 I received very little information	1	0	1 (10%)	
• 5 I received no information at all	0	0	0	

(Continued)

Appendix 2. Comparison of the satisfaction survey between groups *(Continued)*.

Item	*Total*	*NC*	*C*	*p*
Q11. **Instructions at discharge** include monitoring symptoms following the procedure, instructions on medicines and at-home care, and the need for stent removal in a second step. Before leaving hospital, were you provided with written instructions at discharge?				0.198
• 1 Yes	34	27 (93.1%)	7 (70%)	
• 2 No	2	1 (3.4%)	1 (10%)	
• 3 Does not know/refuses to answer	3	1 (3.4%)	2 (20%)	
Q12. When carrying the stent, did you have any of **these symptoms**?				
• 1 Pain	4	2 (7.7%)	2 (40%)	0.044
• 2 Bloody urine	1	0	1 (20%)	
• 3 Voiding difficulty or discomfort	2	2 (7.7%)	0	
• 4 None	24	22 (84.6%)	2 (40%)	
• 5 Other (please specify)				
Q13. The patient could lead a **normal life** while carrying the double J stent. From 1 to 5, to what extent do you agree with that? (5 = completely normal life) •	38	5/5 (r: 5)	3.6/5 (r:1-5)	<0.01
Q14. From **0 to 10, how uncomfortable** was it for the patient to carry the stent? (0 = no uncomfortable at all // 10 = highly uncomfortable) •	38	1.03/10 (R: 0-6)	5.1/10 (R: 0-10)	<0.01
Q15. Before stent removal, **were you contacted again**, either in person or by telephone, to **inform you of the removal** of the stent?				
• 1 Yes	33	29 (100%)	4 (40%)	<0.01
• 2 No	1	0	1 (10%)	
• 3 Does not know/refuses to answer	5	0	5 (50%)	
Q16. Before stent removal, did you have to **make an appointment yourself** for the removal of the stent?				
• 1 Yes	3	3 (10.3%)	0	0.105
• 2 No	35	26 (89.7%)	9 (90%)	
• 3 Does not know/refuses to answer	1	0	1 (10%)	
Q17. From 1 to 10, **how satisfied are you with the whole process** since the stent was placed? How satisfied are you with the information provided, with the period during which the patient was carrying the stent, with the removal process, and with the resolution of it? •	39	9.86/10 R: (8-10)	8.00/10 R: (3-10)	<0.01