

Place des endoscopes à usage unique



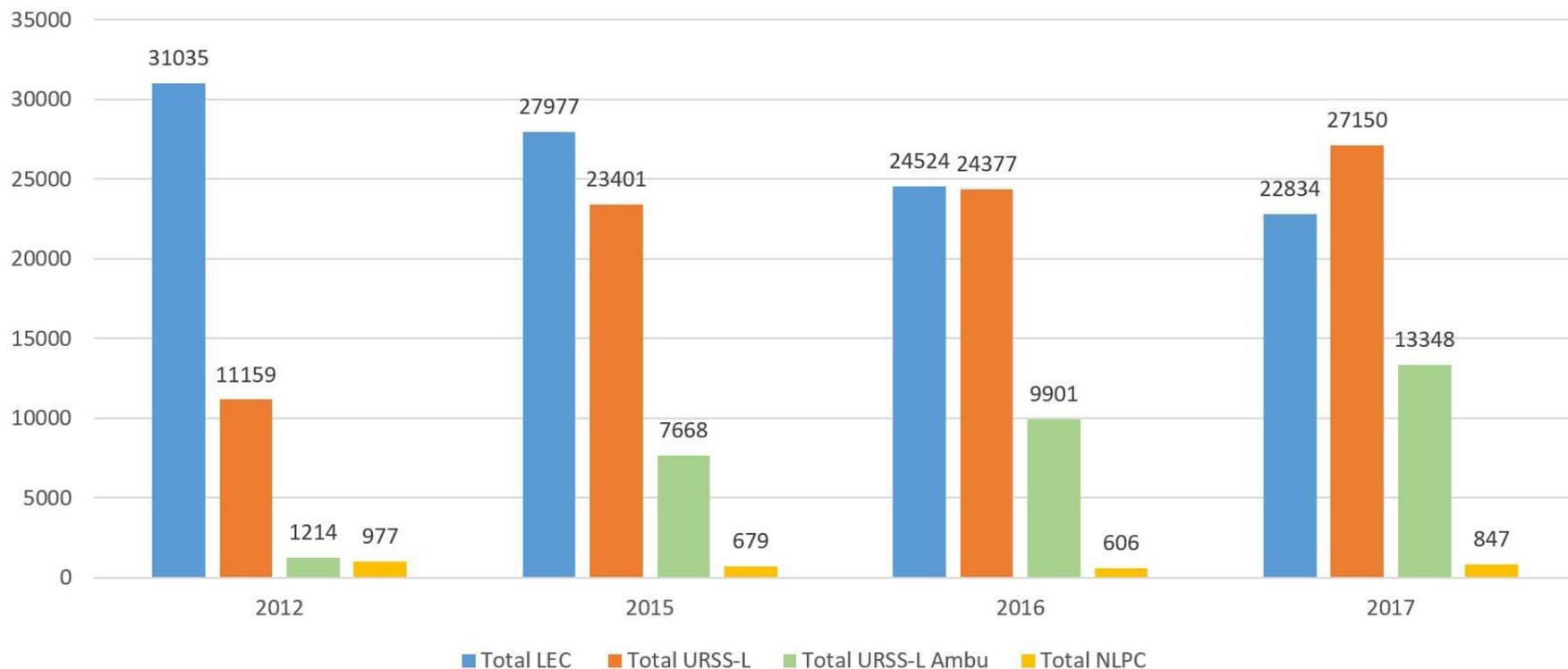
Dr N. Abid
Urologie et Chirurgie de la Transplantation
Hôpital Edouard Herriot
CHU Lyon

- Pas de conflit d'intérêt

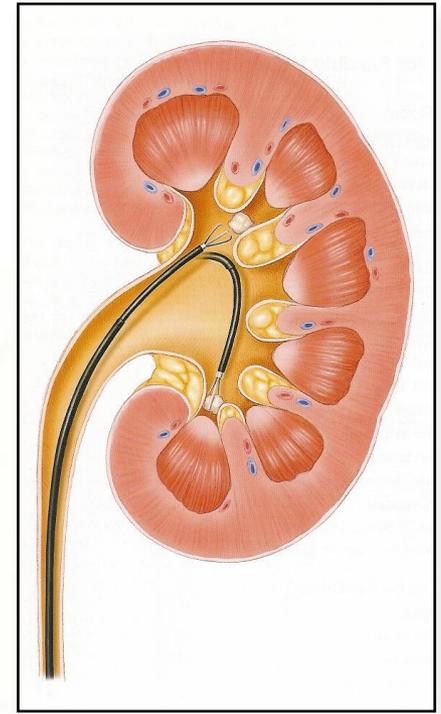
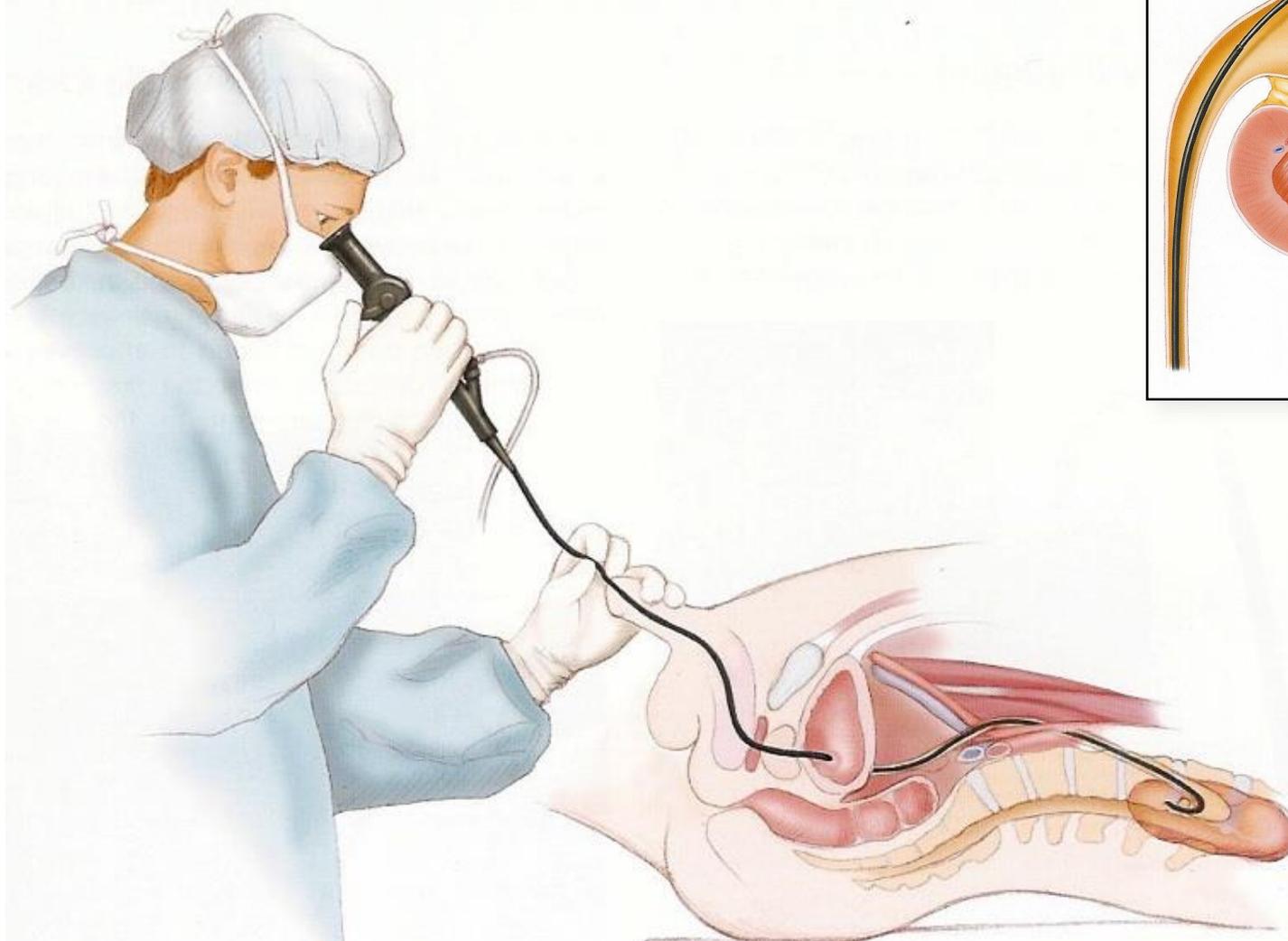
Evolution du traitement des calculs rénaux en 2017 en France

Traitements calculs rénaux 2012-2017

<http://www.scansante.fr/applications/statistiques-activite-MCO-par-diagnostic-et-actes?secteur=MCO>



urétroscope souple



Caractéristiques des endoscopes

Boutons doubles
pour la balance des blancs,
la capture d'image/de vidéo,
l'arrêt sur image et le zoom

Blocage automatique
du mécanisme de courbure
pour réduire la fatigue du
chirurgien/fatigue

Luer lock
inclus dans chaque
endoscope

Poignée légère
et ergonomique pour réduire la
fatigue pendant l'utilisation

Véritable rapport
de couple 1:1

3,6 Fr
canal de
travail

Courbure de 270 degrés
in both directions dans les deux
directions

Courbure passive
pour une navigation plus
facile au niveau de la
jonction pyélo-urétérale

PUSEN Uscope



Figure 2. Touchscreen monitor with CMOS digital imaging.



Figure 3. Optional Image Processor --- Adaptive with hospital screen

BOSTON Lithovue

Boston
Scientific

The LED light source is integrated, and there's no need to white balance.

Ergonomically designed, lightweight handle.

Flexible sheath has a 3.6F ID working channel.



A 7.7F tip diameter and 9.5F [$\leq 3.23\text{mm}$] outer diameter easily fits the average human ureter with renal colic.⁹



A digital CMOS imager in the tip has a working distance of 2mm–50mm to offer a deep depth of field.



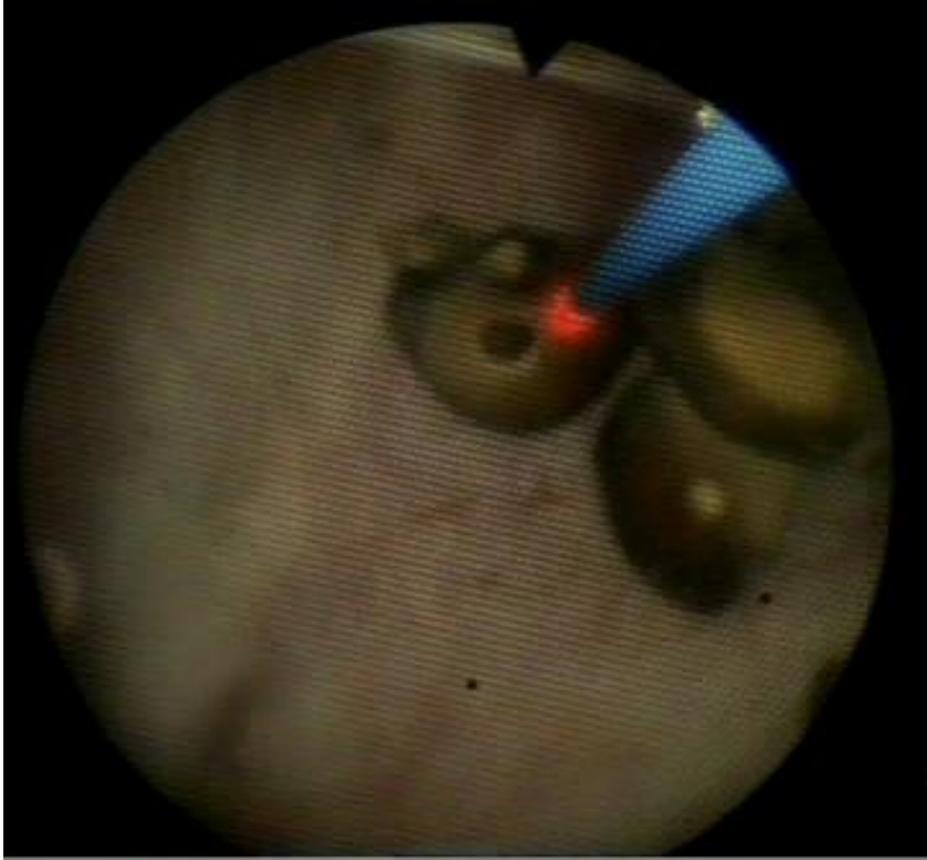
All-in-one, touch-screen PC includes the monitor, image processor and controller.



With full 270° scope deflection in both directions, as well as standard and reverse options, you have the flexibility to perform your procedures the way you prefer.

	Marque	Capteur	Ecran dédié	CH	Canal opérateur	Gaine 10/12	Déflexion
URF-V	OLYMPUS	CCD		9,9	3,6	Non	180°/275°
URFV-3	OLYMPUS	CMOS		8,4	3,6	Oui	275°/275°
LITHOVUE UU	BOSTON	CMOS	Oui	9,5	3,6	Oui	270°/270°
USCOPE UU	PUSEN	CMOS	Oui	9,5	3,6	Oui	270°/270°

Ureteroscope flexible fibré vs numérique



A comprehensive literature-based equation to compare cost-effectiveness of a flexible ureteroscopy program with single-use versus reusable devices

Giovanni S. Marchini ^{1,2}, Fábio C. Torricelli ^{1,2}, Carlos A. Batagello ^{1,2}, Manoj Monga ^{1,2}, Fábio C. Vicentini ¹, Alexandre Danilovic ¹, Miguel Srougi ¹, William C Nahas ¹, Eduardo Mazzucchi ¹

tween single-use and reusable scopes. Operative time was in average 20% shorter with digital scopes, single-use or not. Reusable digital scopes seem to last longer than optic ones, though scope longevity is very variable worldwide. New scopes usually last four times more than refurbished ones and single-use ureterorenoscopes have good resilience throughout long cases. Longer scope longevity is achieved with Cidex and if a dedicated nurse takes care of the sterilization process. The main surgical factors that negatively impact device longevity are lower pole pathologies, large stone burden and non-use of a ureteral access sheath. We have built a comprehensive financial cost-

Effacité traitement

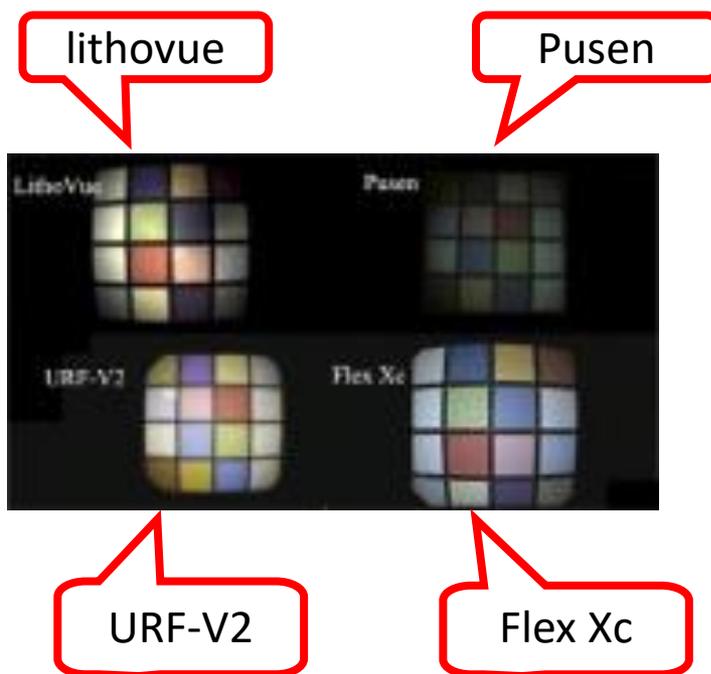
TAUX DE SUCCÈS DE L'INTERVENTION SELON LES RÉSULTATS DES ÉTUDES PORTANT SUR L'EFFICACITÉ CLINIQUE DES URS FLEXIBLES NUMÉRIQUES À USAGE UNIQUE

Auteur (année) Pays [réf.]	Définition du taux de succès	URS à usage unique URS réutilisables	n	Taux de succès n (%)	valeur p
Usawachintachit <i>et al.</i> (2017) États-Unis [26]	Absence de lithiase urinaire trois mois après l'intervention	LithoVue™	40 ¹	24 (60)	0,4
		URF-P6, Olympus (Opt.)	38	17 (45)	
Mager <i>et al.</i> (2018) Allemagne [25]	Extraction complète per-opératoire des lithiases urinaires	LithoVue™	60	51 (85)	0,8
		Storz Flex -X ^c (Num.) ou Storz Flex-2S (Opt.)	62	51 (82)	
	Objectif de l'urétéroscopie atteint	LithoVue™	8	8 (100)	0,2
		Storz Flex -X ^c (Num.) ou Storz Flex-2S (Opt.)	6	4 (67)	
Total		LithoVue™	68	59 (87)	0,4
		Storz Flex -X ^c (Num.) ou Storz Flex-2S (Opt.)	68	55 (81)	

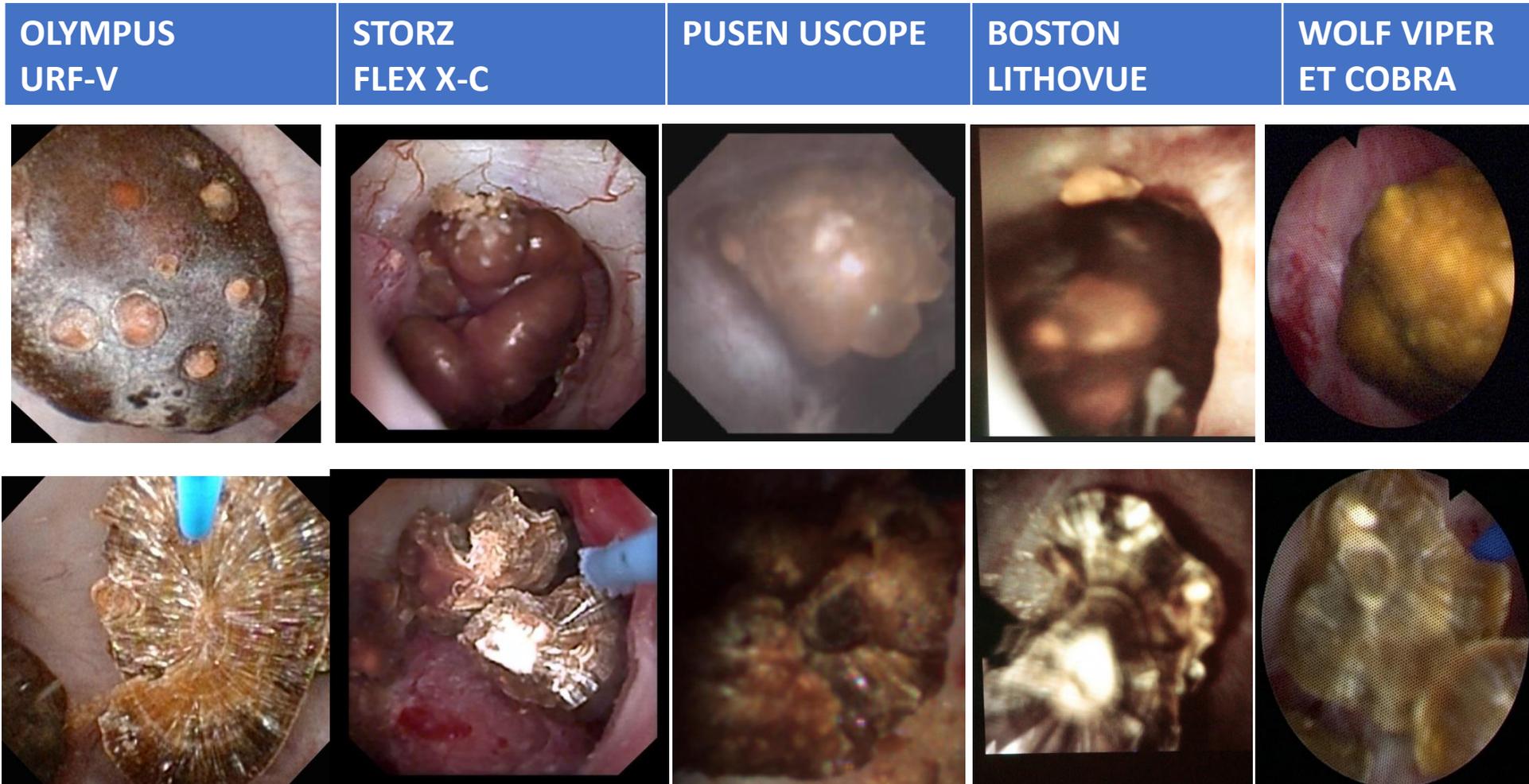
Opt. : optique; Num. : numérique

¹ Les données étaient disponibles pour 78 des 142 patients traités pour lithiases urinaires (55 %). La perte au suivi était de 56 % (52 sur 92) dans le groupe intervention et 24 % (12 sur 50) dans le groupe comparateur.

Qualité image

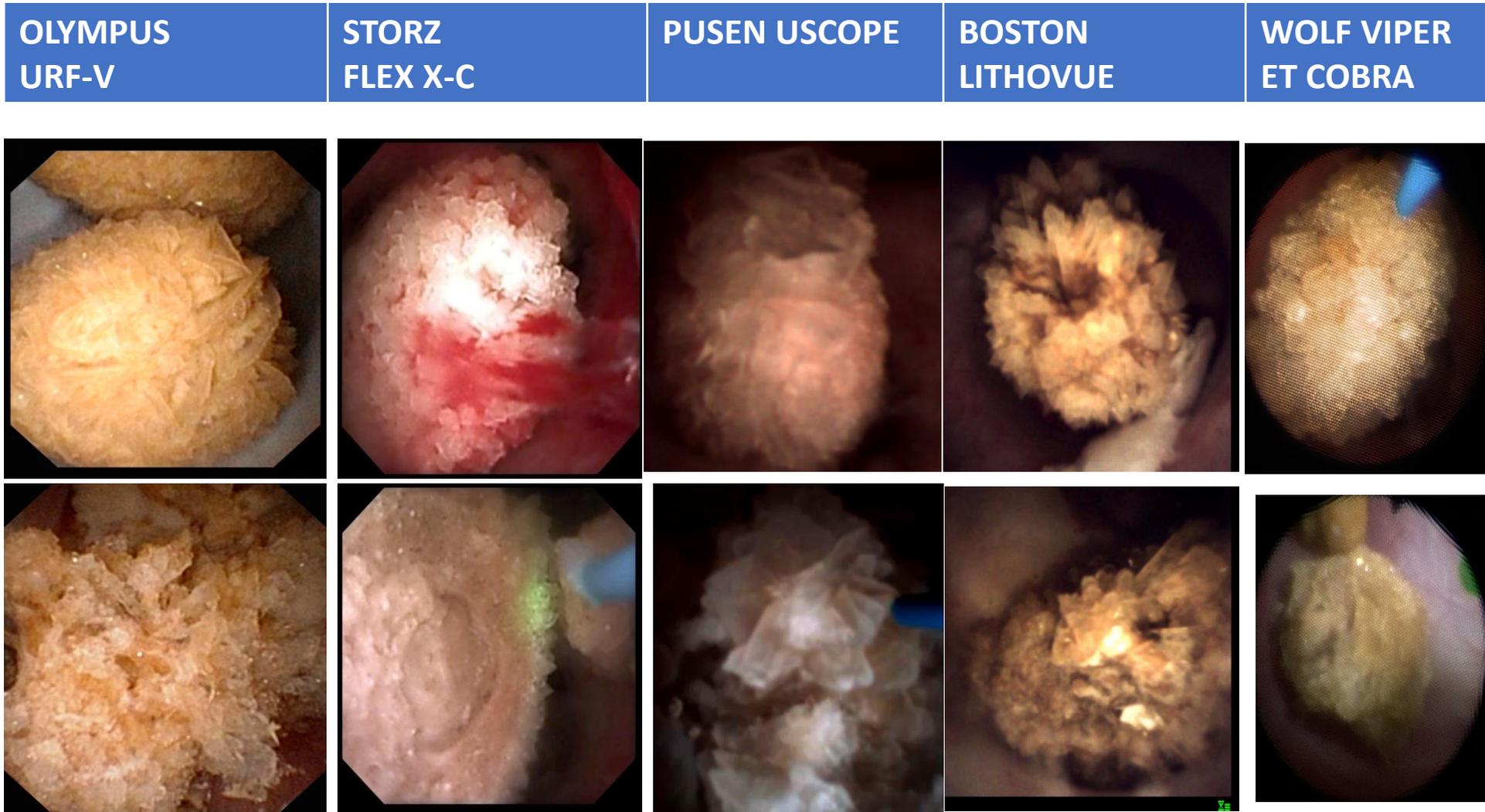


R.E.C calcul -Ia- whewellite surface et section



Vincent Estrade, Angoulême - Bordeaux

R.E.C calcul -IIB- weddellite surface et section



Vincent Estrade, Angoulême - Bordeaux

Table 1 Characteristics of currently available flexible ureteroscopes

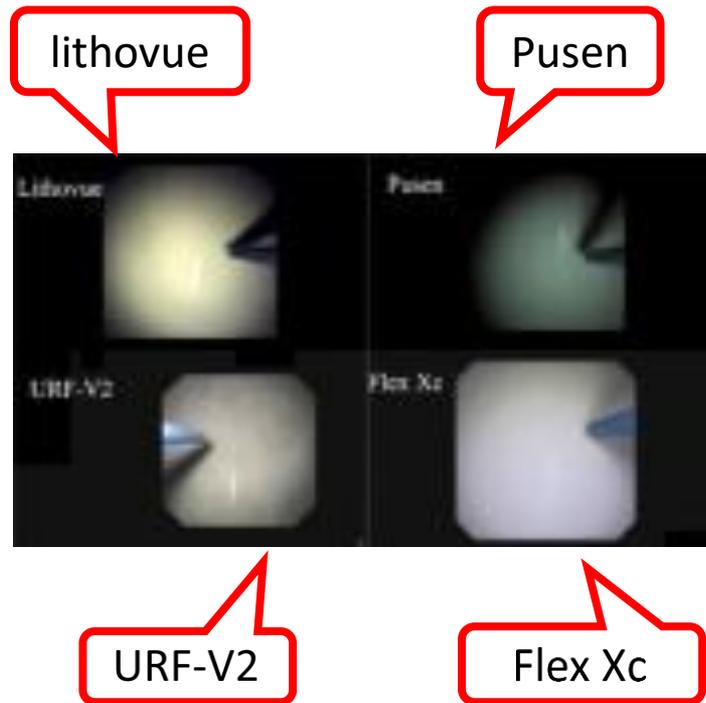
Brand	Model	Single-use	Type		Cross-section		Cross-section size*		Working channel size*	Working channel position*			Deflection angulation* up/downward	Light source**		Enhanced imaging		
			Fiber-optic	Digital	Round	Oval	Tip	Shaft		3 o'clock	9 o'clock	Additional		External	Internal	NBI	PDD***	Image 1-S****
Olympus	URF-P5		x		x		5.3F	8.4F	3.6F		x	-	180°/275°	x			(x)	(x)
	URF-P6		x		x		4.9F	7.95F	3.6F		x	-	275°/275°	x			(x)	(x)
	URF-P7																(x)	(x)
	URF-V															x		
	URF-V2															x		
	URF-V3															x		
Storz	Flex X2/																(x)	(x)
	Flex Xc																	x
Wolf	Viper																(x)	(x)
	Boa vision																	
	Cobra																(x)	(x)
	Cobra vision																	
Boston Scientific	Lithovue																	
Pusen	Uscope																	
OTU Medical	Wiscope																	
Poly-Diagnost	Poly-Scope																(x)	(x)

Conclusions

Miniaturization, digital image caption and image enhancement technologies seem to be the major determinants defining the best flexible ureteroscope for UTUC treatment.

Single-use ureteroscopes may cap the theoretical risk of instrument contamination by malignant cells and warrant prompt availability of instruments with intact operational performance. The impact of further factors, such as distal tip design, torque, working channel position, as well as upcoming technological innovations should be evaluated in multicentric prospective randomized controlled trials based on solid outcomes to define the best flexible ureteroscope for UTUC treatment.

Sortie canal opérateur



Intérêt d'un urétéroscope à usage unique

- Casse
- Disponibilité
- Contamination croisée
- Coût
- Impact environnemental

Risque de casse des
urétéroscopes

Previous studies

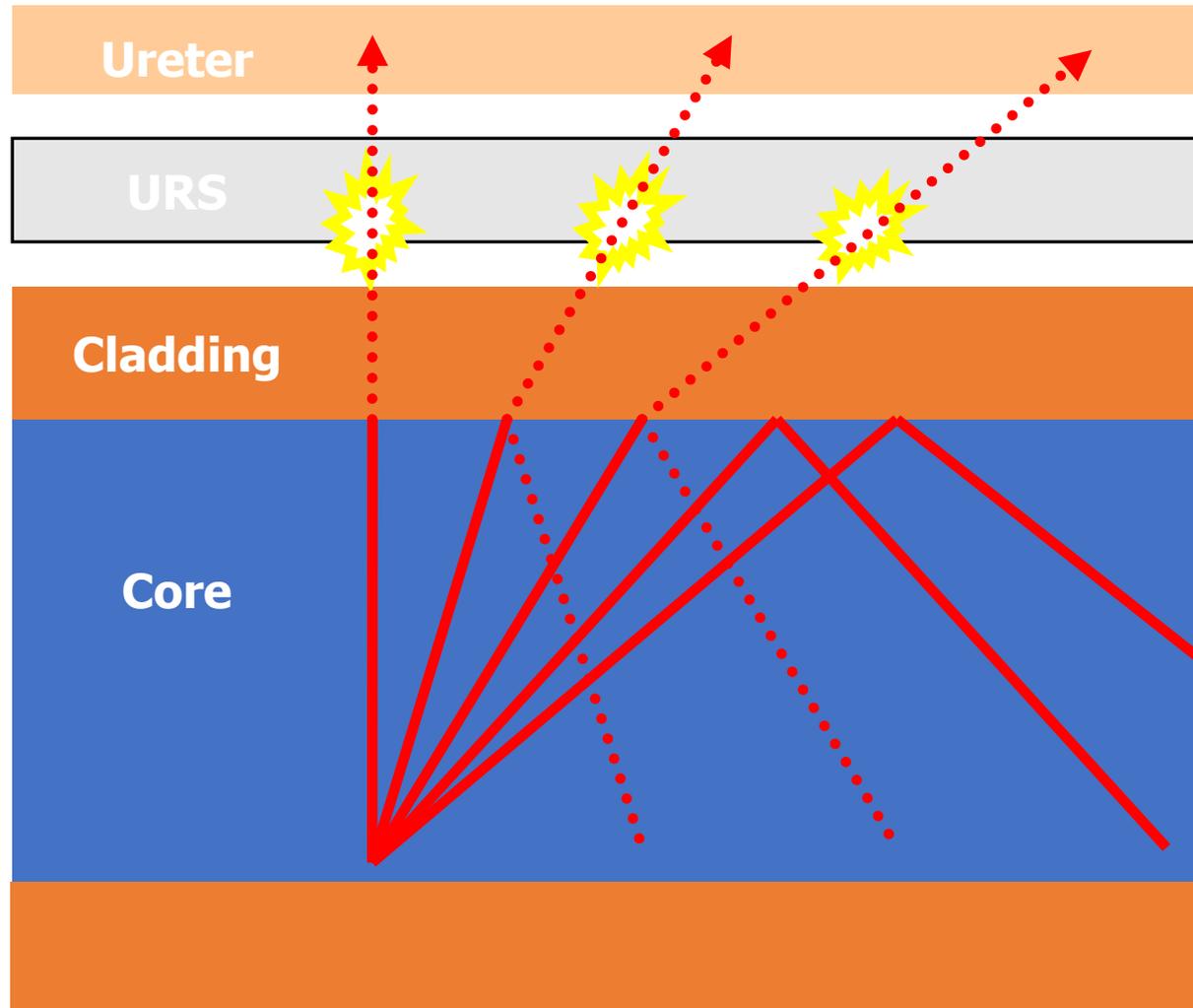
Reuseable scopes: uses per repair?

Author	Setting	Finding
Afrane et al. J Urol 2000	USA	6-15 cases per repair
Collins et al. BJUi 2004	UK	44 cases per repair
Carey et al. J Urol 2006	USA	40-48 cases per repair (new fURS) 11 cases per repair (refurbished fURS)
Monga et al. J Urol 2006	USA	3-14 cases per repair (brand dependent)
Carey et al. Urology 2014	USA	Refurbished fURS 7 cases per repair
Kramolowsky et al. J Endourol 2016	USA	21 cases per repair \$355 repair cost per case performed

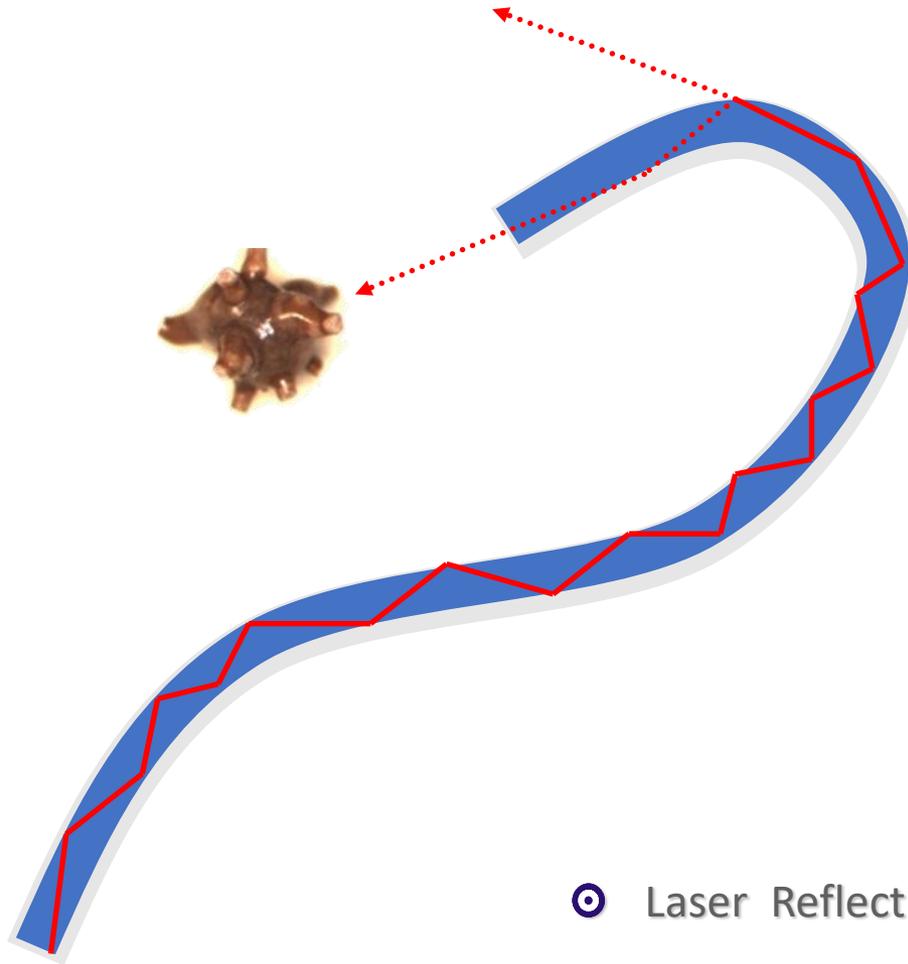
Mean no. of cases approximately: 20

Contrainte des fibres laser

⊙ Laser Reflection vs Refraction



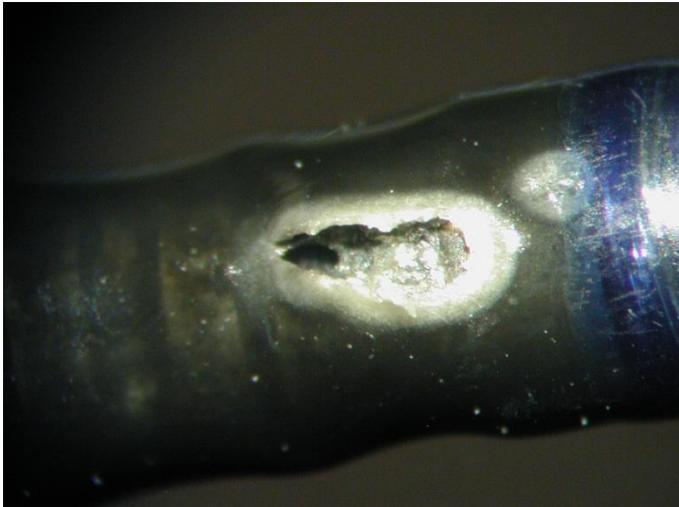
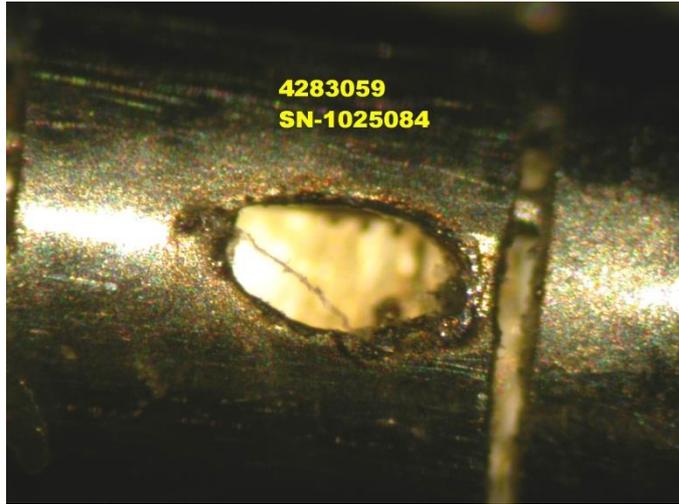
Laser en déflexion



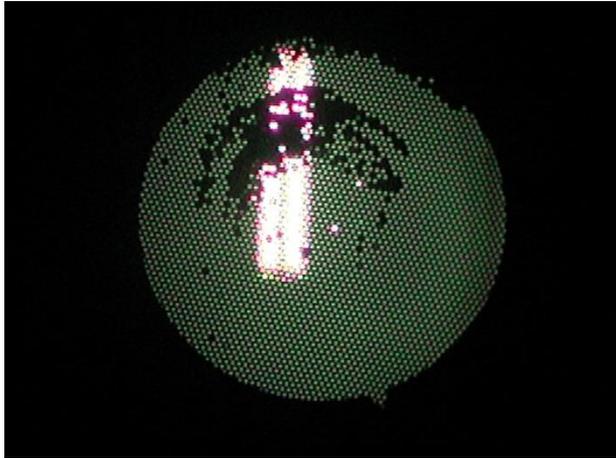
⊙ Laser Reflection vs Refraction

How to damage your Flexi URS

🕒 Laser



Problème de manipulation







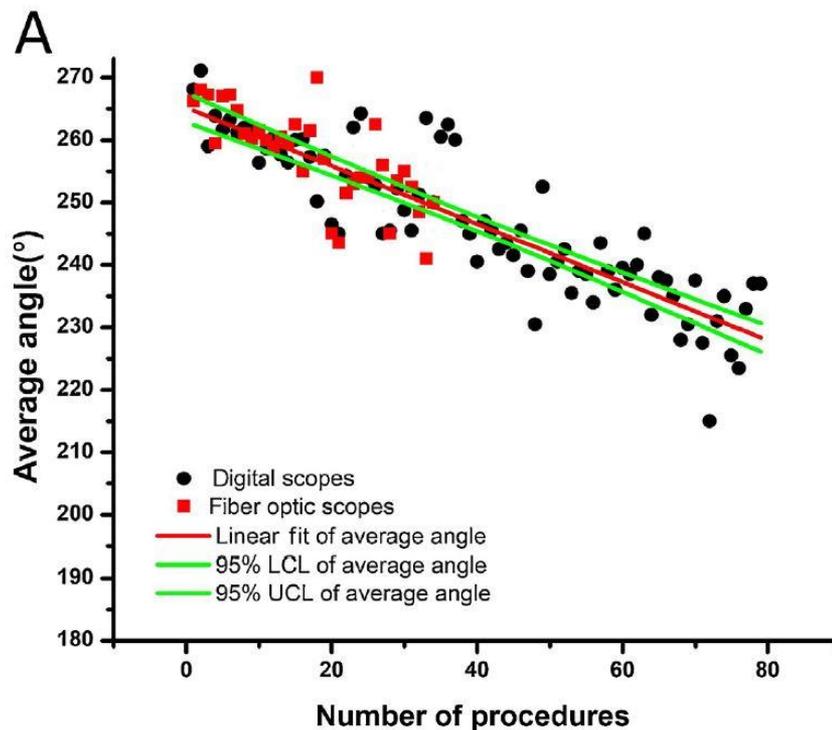
Endo-urology

Durability of Flexible Ureterscopes: A Prospective Evaluation of Longevity, the Factors that Affect it, and Damage Mechanisms

Jaap D. Legemate^{a,*}, Guido M. Kamphuis^a, Jan Erik Freund^a, Joyce Baard^a, Stefano P. Zanetti^a, Michele Catellani^a, Harry W. Oussoren^b, Jean I. de la Rosette^a

^a Department of Urology, AMC University Hospital, Amsterdam, The Netherlands

^b Department of Urology, AMC University Hospital, Amsterdam, The Netherlands





Endo-urology

Durability of Flexible Ureteroscopes: A Prospective Evaluation of Longevity, the Factors that Affect it, and Damage Mechanisms

Jaap D. Legemate^{a,*}, Guido M. Kamphuis^a, Jan Erik Freund^a, Joyce Baard^a, Stefano P. Zanetti^a, Michele Catellani^a, Harry W. Oussoren^b, Jean J. de la Rosette^a

^a 5. Conclusions il

There is great variability in the durability of the digital and fiber optic flexible reusable USCs evaluated, ranging from 10 to 79 procedures before the first repair. The median number of uses was **27** with a median total ureteroscopy time of **14 h**. The fiber optic and the digital imaging and deflection systems proved to be relatively durable. Damage to the flexible shaft is the most important limitation to USC durability. Prevention of intraoperative manual forcing of flexible USCs may contribute to maximization of their overall durability.

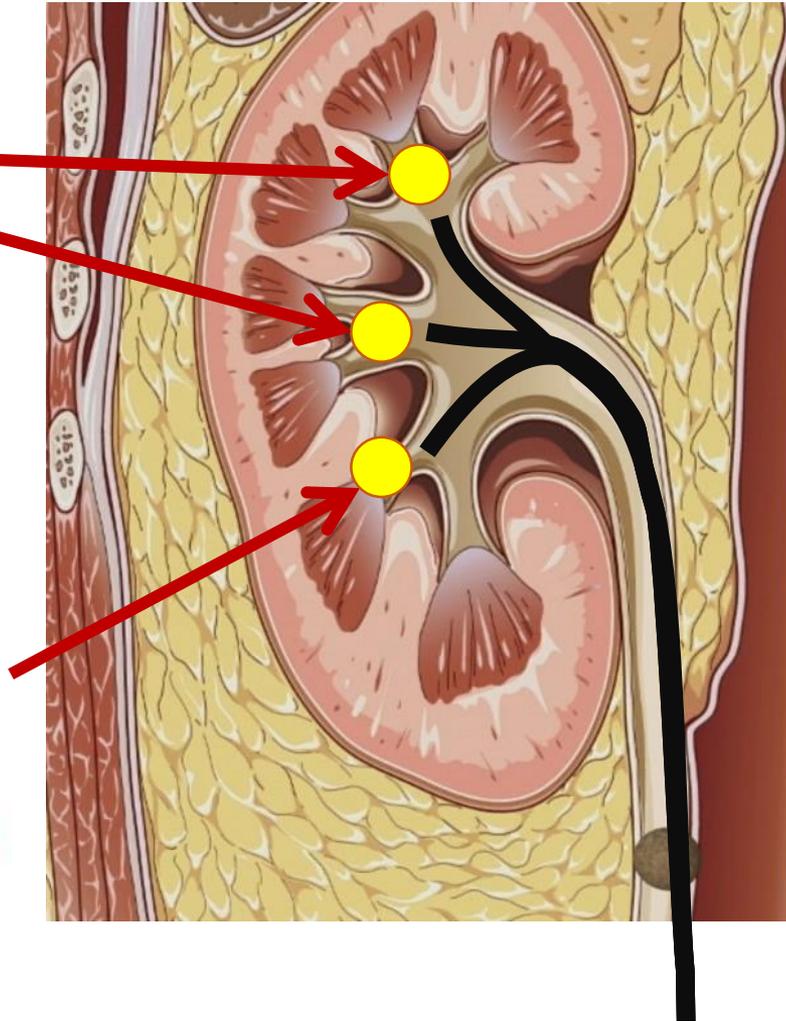
Avantage de l'urétéroscopie flexible: *Accès à tous les calices*



GREEN LIGHT



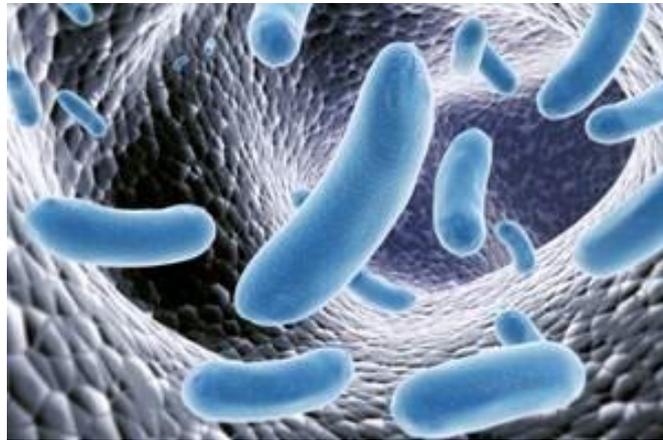
GREEN LIGHT



Disponibilité
urétéroscope

Indisponibilité si réparation

- Délai d'immobilisation en fonction du contrat de maintenance
- Retour matériel ou prêt → délai de prélèvement pour examen bactériologique (1 semaine minimum)

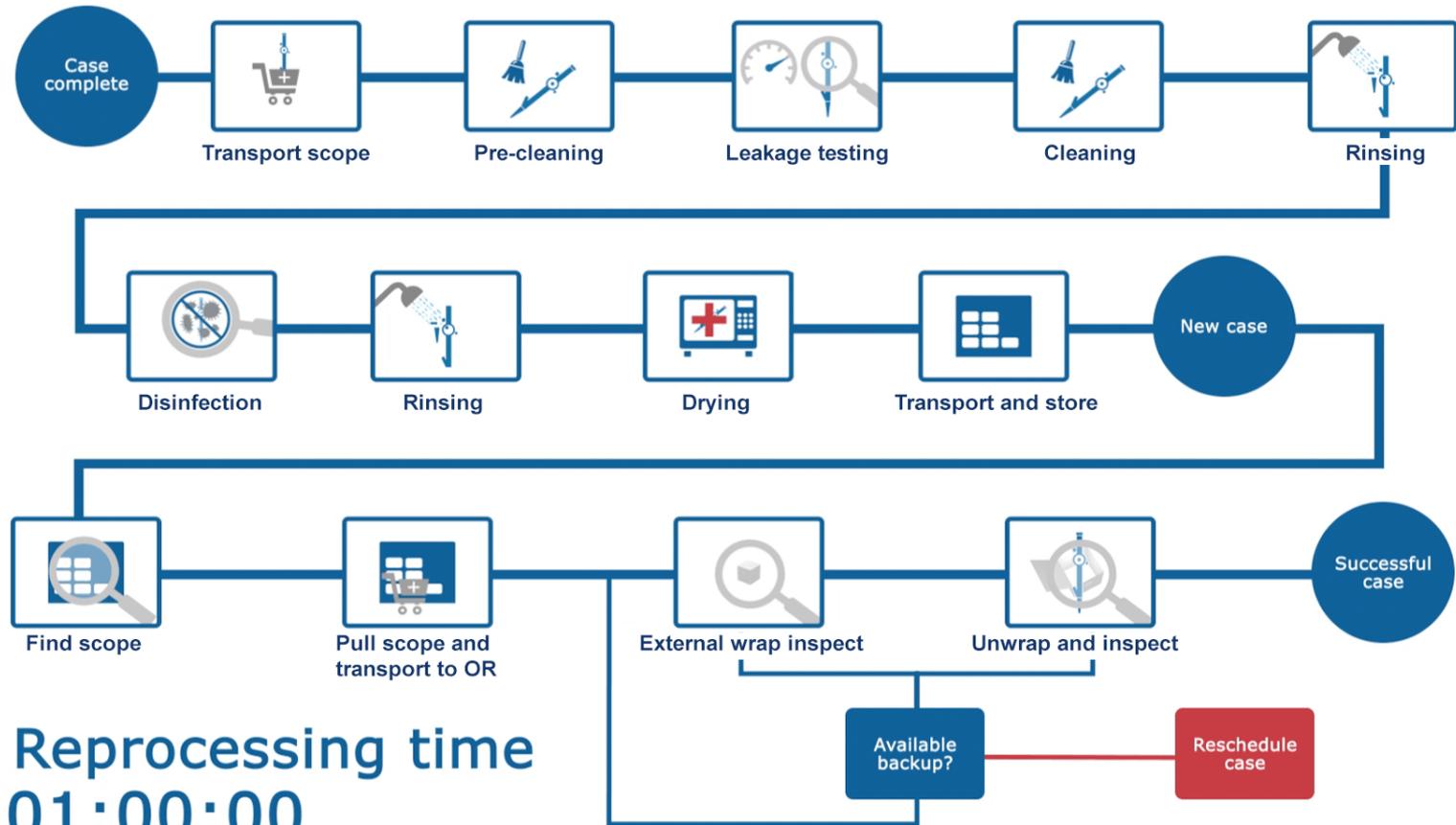


Décontamination de l'endoscope

- Nécessité de personnel disponible
- → prévoir le geste pour éviter une attente de 30 min environ en per opératoire (calcul flushé lors d'une urétéroscopie rigide, double abord en mini NLPC)
- → pas de disponibilité à toute heure (urgence nuit / week-end) – fin de programme

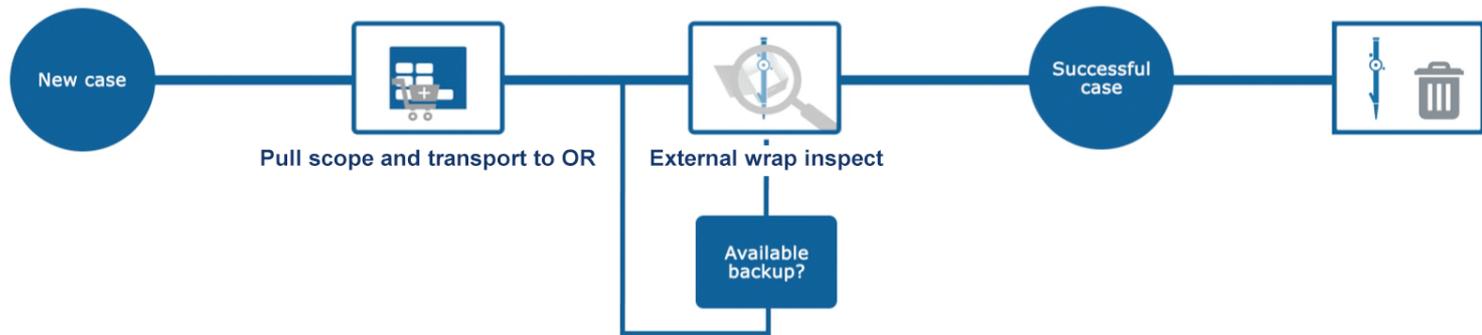


Reusable Ureteroscope



Reprocessing time
01:00:00

Single-Use Ureteroscope



Reprocessing time
00:00:00

Risque contamination



Menu



En direct



Le journal



Suivre



Recherche



Connexion

Premium

Actualité

Economie

Sport

Culture

Art de vivre

Madame



> Actualité > Flash Actu

Marseille: des endoscopes contaminés

Par Le Figaro | Mis à jour le 09/02/2017 à 09:20 / Publié le 09/02/2017 à 09:11

LE FIGARO PREMIUM

> 1€ le premier mois

17 commentaires



Une **centaine de patients ont du être rappelés** par la direction l'AP-HM. La raison ? **La moitié des 18 endoscopes de l'hôpital Nord de Marseille ont été contaminés au germe Pseudomas**, rapporte aujourd'hui *La Provence*.

Le Pseudomas, une bactérie présente dans l'eau, provoque de graves infections chez les personnes fragiles. Les **endoscopies ont donc été suspendues** et les appareils contaminés ont été séquestrés par mesure de sécurité sur ordre du comité de lutte contre les infections nosocomiales.

Soupçonnés d'avoir contaminé les endoscopes, **les sept machines servant à laver les appareils ont été changées** plus tôt que prévu, selon l'AP-HM. Pour ailleurs, **aucun signe clinique de contamination** n'a été, pour l'instant, découvert **chez les patients** rappelés.



Lunettes de soleil

Sélection de lunettes de soleil en promo !

Endoscopes : 8 incidents de contamination par an en France

Par **Julian Prial**

Une analyse de l'ANSM fait apparaître 8 incidents de contamination par an avec des endoscopes. Un sur cinq est dû au dispositif, les autres sont dus à des défauts de pratiques.



LORI WASELCHUK/AP/SIPA

a. Les incidents de contamination des endoscopes et/ou des patients

De 2010 à 2013, l'ANSM a reçu 32 signalements de contaminations : contaminations de patients du fait d'un lien suspecté avec un endoscope ou contaminations d'endoscopes détectées au cours d'un contrôle microbiologique de routine.

	2010	2011	2012	2013	TOTAL
contaminations de patients avec un lien suspecté avec un endoscope	3	3	4	4	14
contaminations endoscope détectées au cours d'un contrôle de routine	9	4	1	4	18
TOTAL	12	7	5	8	32

Les causes des incidents peuvent être classées en 5 catégories :

- * E = cause liée à l'endoscope
- * M = défaut de maintenance
- * P = défaut dans les pratiques de nettoyage et désinfection
- * Q = absence de qualification des performances endoscope/LDE
- * ? = la cause n'a pas pu être déterminée

143/147 boulevard Anatole France - F-93285 Saint-Denis Cedex - Tél.: +33 (0)1 55 87 30 00 - www.ansm.sante.fr

Publié 22.07.2015 à 10h39 |



Les occurrences de ces causes pour les incidents reçus entre 2010 et 2013 sont les suivantes :

	2010		2011		2012		2013		TOTAL	
	nb	%	nb	%	nb	%	nb	%	nb	%
E	3	25%	2	29%	2	40%	0	0%	7	22%
M	5	42%	4	57%	1	20%	3	38%	13	41%
P	3	25%	5	71%	2	40%	7	88%	17	53%
Q	0	0%	1	14%	1	20%	2	25%	4	13%
?	2	17%	0	0%	0	0%	1	13%	3	9%



ELSEVIER

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

The effectiveness of sterilization for flexible ureteroscopes: A real-world study

Cori L. Ofstead MSPH *, Otis L. Heymann BA, Mariah R. Quick MPH, Ellen A. Johnson BAS, John E. Eiland MS, RN, Harry P. Wetzler MD, MSPH

Ofstead & Associates, Inc, Saint Paul, MN

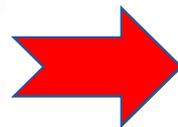
Results: Researchers examined 16 ureteroscopes after manual cleaning and sterilization using hydrogen peroxide gas. Every ureteroscope had white residue, scratches, or debris in the lumen. **Tests detected contamination on 100% of ureteroscopes** (microbial growth 13%, adenosine triphosphate 44%, hemoglobin 63%, and protein 100%). Contamination levels exceeded benchmarks for clean gastrointestinal endoscopes for hemoglobin (6%), adenosine triphosphate (6%), and protein (100%). A new, unused ureteroscope had hemoglobin and high protein levels after initial reprocessing, although no contamination was found before reprocessing.

Conclusions: Flexible ureteroscope reprocessing methods were insufficient and may have introduced contamination. The clinical implications of residual contamination and viable microbes found on sterilized ureteroscopes are unknown. Additional research is needed to evaluate the prevalence of suboptimal ureteroscope reprocessing, identify sources of contamination, and determine clinical implications of urinary tract exposure to reprocessing chemicals, organic residue, and bioburden. These findings reinforce the need for frequent audits of reprocessing practices and the routine use of cleaning verification tests and visual inspection as recommended in reprocessing guidelines.

Predictive risk factors of urinary tract infection following flexible ureteroscopy despite preoperative precautions to avoid infectious complications

Michael Baboudjian¹  · Bastien Gondran-Tellier¹ · Rony Abdallah¹ · Pierre Clement Sichez¹ · Akram Akiki¹ · Sarah Gaillet¹ · Veronique Delaporte¹ · Gilles Karsenty¹ · Eric Lechevallier¹ · Romain Boissier¹

Ureteroscopes play an important diagnostic and therapeutic role in urology. However, if endoscopes do not attain a sufficiently high level of sterilization, they may cause outbreaks of healthcare-acquired infections. Recently, Ofstead et al have examined 16 ureteroscopes after manual cleaning and sterilization. Tests detected contamination in 100% of ureteroscopes (including hemoglobin, adenosine triphosphate, protein) and microbial cultures were positive for samples from 2 of 16 ureteroscopes [23]. In front of growing concerns regarding the transmission of severe infections through reusable endoscopes [24], it is supposed that operating with a single-use fURS would help avoiding cross-contamination of rURS and thus decrease postoperative infectious complication [25]. We found that there is no significant difference in postoperative UTI rates based on the type of fURS used, single use or reusable. To our knowledge, this is the first study to compare UTI rates according to the type of fURS used.



Pas de différence significative sur les infections post opératoires en fonction de l'endoscope utilisé

Coût matériel

Prix des urétéroscopes non négociés

	Marque	Tarif
URF-V	OLYMPUS	15 à 20 K
URFV-3	OLYMPUS	15 à 20 K
LITHOVUE UU	BOSTON	1002€ TTC 950€ HT
USCOPE UU	PUSEN	738€ TTC 615 HT

GHM 11C111 - Interventions par voie transurétrale ou transcutanée pour lithiases urinaires, niveau 1

Public: 1732,72 E

Privé: 887,38 E

Cost-Benefit Comparison

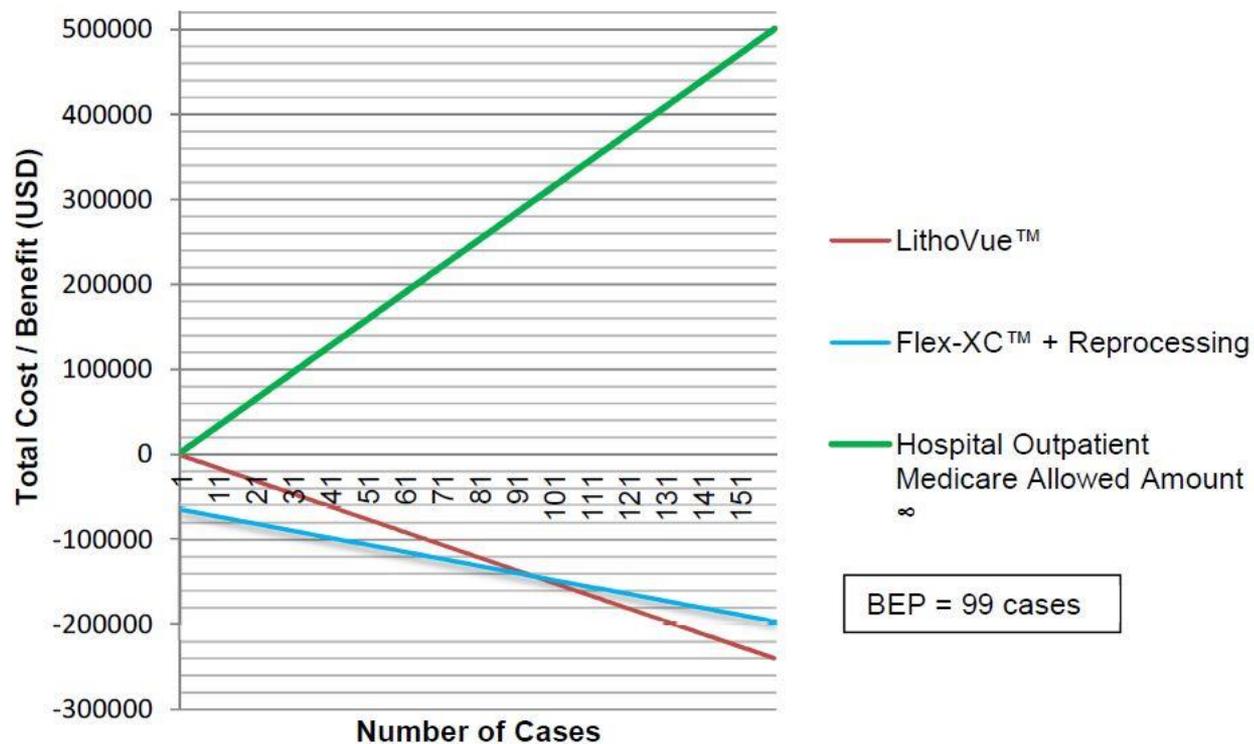


Figure 1. Estimated costs of LithoVue™ versus currently used Flex-XC™ with reprocessing fees and labor wages. Benefits represented as the 2016 Hospital Outpatient Medicare Allowed Amount⁸.

BEP = Break-even point between the two alternatives.

The Economic Implications of a Reusable Flexible Digital Ureteroscope: A Cost-Benefit Analysis

Christopher J. Martin , Sean B. McAdams , Haidar Abdul-Muhsin , Victoria M. Lim , Rafael Nunez-Nateras , Mark D. Tyson , Mitchell R. Humphreys

RESULTS:

One hundred and sixty cases utilized a flexible reusable URS. There were a total of 11 URS damages during this time period, with average cases to failure being 12.5 cases. Excluding original purchasing costs, the cost analysis reveals an amortized cost of \$848.10 per use. After 99 URS cases, cost-benefit analysis favors reusable URS compared to disposable URS.

CONCLUSIONS:

Digital URS is the latest trend in the evolution of endourology. It appears that a disposable URS may be cost beneficial in centers with lower case volumes per year, but institutions with high volume of cases may find reusable URS cost beneficial.

The Journal of Urology
20 September 2016

Nombre de casse d'urétéroscope à Lyon, HEH en 1 an

N° Equipement	Type	Date d'appel :	Date dispo.	Somme de Total ext TTC	Nombre de N° Intervention
20170880701	URF V3 FLEX	21-sept-18	25/10/2018	0	1
		03-déc-18	04/01/2019	7999,31	1
		17-juil-19	11/09/2019	0	1
	Total URF V3 FLEX			7999,31	3
20170880702	URF V3 FLEX	09-juil-18	28/10/2018	9275,17	1
		14-nov-18	13/12/2018	0	1
		22-mai-19	01/07/2019	7946,26	1
	Total URF V3 FLEX			17221,43	3
20170880800	URF V3 FLEX	21-sept-18	16/11/2018	9232,99	1
		13-mai-19	13/06/2019	8031,94	1
	Total URF V3 FLEX			17264,93	2
Total général				42485,67	8

220 gestes d'urétéroscopie souple programmés sur la période

Le système ISIRIS

solution innovante, brevetée par Coloplast, conçue pour le retrait des tuteurs urétéraux en un seul geste



Cystoscope souple stérile à usage unique

- Numérique
- Diamètre de l'extrémité distale : 16 Ch
- Longueur utile = 39 cm
- Angles de déflexion = 90° vers le bas – 80° vers le haut
- Pince permettant le retrait de sondes urétérales double J

Moniteur réutilisable sur batterie

- Possibilités de prendre des photos et/ou de faire des vidéos (60 à 90 min d'enregistrement)

Performances techniques

Cystoscopes	Qualité image	Débit irrigation avec pince	Flexibilité avec pince activée
Isiris	2 ^{ème}	comparable	Augmente
Olympus CYF5	5 ^{ème}		Diminue
Olympus CYF-VH	1 ^{er}		Diminue
Storz 11272C1	4 ^{ème}		Diminue
Vision Sciences CST 5000 endosheath	3 ^{ème}		Diminue

- Le champs de vision est réduit avec Isiris mais suffisant pour un retrait de double J.
- Isiris est une alternative aux procédures actuelles pour le retrait des double J.

World J Urol
ISSN 1674-2800/12(10)-0914

ORIGINAL ARTICLE

The new grasper-integrated single use flexible cystoscope for double J stent removal: evaluation of image quality, flow and flexibility

M. Taha^{1,2} · E. Emilian^{1,3} · M. Baghdadi¹ · A. Orma¹ · E. Serisian¹ · A. Barreira¹ · S. Prieth⁴ · O. Troner⁴

Received: 3 April 2011 / Accepted: 3 December 2011
© Springer-Verlag Berlin Heidelberg 2012

Abstract
Background A new single use digital flexible cystoscope (IC) Isiris- α from Coloplast[®] with an incorporated grasper has been developed to perform double J stent removal. There is a lack of data regarding the comparison of image quality, flexibility and flow between classic cystoscopes and the new Isiris- α .

Materials and methods Five different FC were used to compare the image quality, the field of view, the loss of flow and the deflection loss. Two standardized grids, three stones of different composition and a ruler's image were filmed in four standardized different scenarios. These videos were shown to three subjects that had to evaluate them. Water outflow was measured in relation to all devices with and without the grasper inside, instruments tip deflection was measured using a software.

Results In the subjective analysis of the image quality Isiris- α was the second FC best scored. At 3 cm of distance, the field view of Isiris- α was the narrowest. Comparing the water flow in the different FCs, we observed a water flow decrease in all cystoscopes when the grasper was loaded in the working channel. Isiris- α deflection and flow increase when the grasper is activated.

Conclusion In terms of quality of vision and water flow, the IC Isiris- α is comparable to the other digital FC tested. Field of view is narrower. The results displayed a valid alternative to the standard procedure for DJ removal.

Keywords Cystoscopy · Double J stent · Urologic · Stents · Flexible cystoscope · Grasper · Stone · Stone removal · New technology · Isiris

Background
Double J stent (DJ) removal is one of the most performed practice in urology. An adequate endoscopic view is a key component of this procedure. In the last decade, a variety of standard flexible cystoscope (FC) has improved their vision with incorporation of an increased number of fiberoptic bundles or with the integration of a distal sensor chip [1–3] for digital vision. The insertion of a grasper into the working channel remains a problem for flow and deflection. Recently, a new single use digital FC with an incorporated grasper has been developed to perform stable J stent removal: Isiris- α from Coloplast[®]. So far, there is a lack of data regarding the comparison of image quality, flexibility and flow between classic cystoscopes and the new Isiris- α . The aim of this study is to compare the image quality, to measure the field of view, the loss of flow and the deflection loss due to the grasper insertion in different FC.

Materials and methods
Isiris- α is a single, single use flexible cystoscope designed for removal of DJ accessible in the bladder via an urethral insertion. Isiris- α has been designed to be used with the

Dr. M. Taha
m.taha@sigmail.com

¹ Department of Urology, Hépita Tenon, Hôpital Pierre et Marie Curie – Paris FC, 4 rue de la Chaux, 75020 Paris, France

² Department of Urology, Fondazione IECI-Ca Grande Clementina Magagnoli/Vestibolo, Università degli Studi di Milano, Milan, Italy

³ Department of Urology, Fundación Hospital Universitat Autònoma de Barcelona, Barcelona, Spain

Published online: 16 December 2012

Springer

Impact environnemental

Carbon Footprint in Flexible Ureteroscopy: A Comparative Study on the Environmental Impact of Reusable and Single-Use Ureteroscopes.

Davis NF¹, McGrath S¹, Quinlan M¹, Jack G¹, Lawrentschuk N¹, Bolton DM¹.

Author information

Abstract

PURPOSE: There are no comparative assessments on the environmental impact of endourologic instruments. We evaluated and compared the environmental impact of single-use flexible ureteroscopes with reusable flexible ureteroscopes.

PATIENTS AND METHODS: An analysis of the typical life cycle of the LithoVue™ (Boston Scientific) single-use digital flexible ureteroscope and Olympus Flexible Video Ureteroscope (URV-F) was performed. To measure the carbon footprint, data were obtained on manufacturing of single-use and reusable flexible ureteroscopes and from typical uses obtained with a reusable scope, including repairs, replacement instruments, and ultimate disposal of both ureteroscopes. The solid waste generated (kg) and energy consumed (kWh) during each case were quantified and converted into their equivalent mass of carbon dioxide (kg of CO₂) released.

RESULTS: Flexible ureteroscopic raw materials composed of plastic (90%), steel (4%), electronics (4%), and rubber (2%). The manufacturing cost of a flexible ureteroscope was 11.49 kg of CO₂ per 1 kg of ureteroscope. The weight of the single-use LithoVue and URV-F flexible ureteroscope was 0.3 and 1 kg, respectively. The total carbon footprint of the lifecycle assessment of the LithoVue was 4.43 kg of CO₂ per endourologic case. The total carbon footprint of the lifecycle of the reusable ureteroscope was 4.47 kg of CO₂ per case.

CONCLUSION: The environmental impacts of the reusable flexible ureteroscope and the single-use flexible ureteroscope are comparable. Urologists should be aware that the typical life cycle of urologic instruments is a concerning source of environmental emissions.

KEYWORDS: CO₂ emissions; carbon footprint; flexible ureteroscopy; healthcare delivery

PMID: 29373918 DOI: [10.1089/end.2018.0001](https://doi.org/10.1089/end.2018.0001)

The environmental impacts of the reusable flexible ureteroscope and the single-use flexible ureteroscope are comparable.

Impact environnemental

- URSS usage unique:
 - Seul l'emballage est totalement recyclable
 - Le personnel n'a qu'à jeter l'endoscope et nettoyer le moniteur
- URSS réutilisable
 - **Tous les stérilisants et désinfectants sont toxiques:** risque d'exposition du personnel (cancérigène + effets aigus et chroniques sur la santé)
 - **Impact environnemental** de l'élimination des déchets de la décontamination et de la stérilisation

Impact environnemental

Désinfection haut niveau

vs

Elimination Isiris

- Consommables à usage unique : gants, masque tablier, visière, écouvillons...
- Consommation acide peracétique : 1 bain = 15 litres (50 utilisations) (3 bidons plastiques 5L)
- Eau bactériologiquement maîtrisée = 50L/cycle curatif et 20L/cycle préventif (1 filtre robinet/mois)
- Eau stérile 5L/cycle (1 bidon plastique/cycle)
- Exposition du personnel à l'acide peracétique : irritant muqueuses respiratoire et cutanée
- Rejet de l'acide peracétique dans les eaux usées

- Filière DASRI
- Traitement contrôlé et spécialisée
- Incinération et production de CO₂, eau, oxyde de silice et résidus métalliques
- Taxe locale annuelle facturée à la tonne
- Aucun phtalate dans les composants plastiques
- Utilisation de cartons recyclés pour les emballages
- Coloplast certification ISO 14001



Conclusion

Endoscopes à usage unique:

Avantages

- Performants
- Constance de qualité d'un matériel toujours neuf
- Toujours disponibles
- Absence de stérilisation (pas d'attente)
- Pas de contamination croisée
- Bénéfice environnemental?

Inconvénients

- Moins bonne vision pour les tumeurs
- **Surcoût**

Indications à privilégier

- Cas complexes
 - Calculs calices inférieurs, non relocalisables
 - Chirurgie en double abord
 - Risque infectieux
 - Indisponibilité urétroscope réutilisable
 - Fins de programme
 - Seuil d'activité du centre
-
- Isiris: Ablation JJ des transplantés