Annals of Medicine and Surgery 34 (2018) 14–16

Contents lists available at ScienceDirect

Annals of Medicine and Surgery

journal homepage: www.elsevier.com/locate/amsu

Case report

Massive encrustations as a consequence of longterm indwelling urethral catheter: A rare case report

Tika Ram Bhandari[a,*], Sudha Shahi[b], Naveen Mahaseth[a]

[a] Department of General Surgery, Universal College of Medical Sciences, Bhairahawa, Nepal
[b] Department of ENT, National Academy of Medical Sciences, Kathmandu, Nepal

ARTICLE INFO

Keywords:
Indwelling Foley catheter
Encrustations
Complications

ABSTRACT

Longterm indwelling urethral catheter can cause several complications such as lower urinary tract infections, tissue damage, pain, hemorrhage and encrustation of catheter leading to blockage. A 55- year old male presented with suprapubic pain for three months owing to poorly draining Foley catheter. He had undergone surgery for bladder calculi two and half a years back. He had been discharged with Foley catheter. He did not show up at the hospital for two and half years. The catheter was never changed during this period. Plain X-ray abdomen revealed a large encrustation with radiopacity surrounding the foley's bulb. Open suprapubic cystostomy was performed. The intact Foley catheter with encrusted bulb was removed. His postoperative period was uneventful.

Surgical removal is the only treatment of choice for unusual massive encrustations in long-term indwelling urethral catheter. Minimally invasive technique is getting popularity, however we performed open cystostomy and removal due to the lack of expertise and instruments in our hospital setting. Catheterization under aseptic condition, frequent catheter change, early treatment of urinary infection and proper patient education on catheter hygiene are few methods that can reduce the complications of longterm indwelling urinary catheter.

1. Introduction

Urinary catheterization is the only procedure to drain the bladder in many medical and surgical conditions. Frederick Foley described a rubber tube with a separate lumen which he used to inflate a balloon that keeps the catheter in place in the bladder in 1930's. Transurethral catheterization in urinary retention is the preferred method of choice. An alternative to urethral catheterization can be suprapubic catheterization where there is failure of securing a urethral catheter. Urinary indwelling catheters can give rise to a number of complications viz; urinary tract infections, pain, hemorrhage, iatrogenic hypospadias and pericatheter leakage during longterm use [1]. The catheter develops encrustation by mineral salts, stone formation and gets obstructed when they are kept in situ for longer term. Massive encrustation is thus an unusual complication of a long-term indwelling urethral catheter. Limited cases have been reported in the literature regarding this. We hereby report a rare case of neglected indwelling urethral Foley catheter for two and half a year causing massive encrustations. This case has been reported according to SCARE criteria for case reports [2]. This case has been managed at medical college teaching hospital by consultant General Surgeon and team.

2. Presentation of case

A 55- year old male presented to an outpatient surgery clinic with suprapubic pain for three months due to poorly draining Foley catheter. He was a nonsmoker and did not consume alcohol. He denied any significant history of medical and psychological illness. He had undergone surgery two and half a year ago for bladder calculi. He had been discharged with Foley catheter and advised to follow up in two weeks. He did not show up at the hospital for two and a half years. The catheter had never been changed during this period. He was not able to follow up because of his geographical constrains and poor economic conditions. More than that the patient had accidently broken the portion of the catheter 2 cm distal to its insertion to tip of penis one year before presenting to us and had been able to pass urine through the remains of the catheter. However he complained of abstinence from sex due to discomfort during the entire period. The catheter tube got blocked for the past three months resulting in leakage of urine and constant discomfort.

On physical examination, his vitals were stable. The abdomen was soft, non-tender and nondistended with lower midline scar of previous surgery. His bladder was not palpable. He had nondraining broken

* Corresponding author. MS General Surgery (IOM, TU) Nepal, Department of General Surgery, Universal College of Medical Sciences, Bhairahawa, Nepal.
E-mail addresses: tikanmc@gmail.com (T.R. Bhandari), sudashahi@yahoo.com (S. Shahi), meet4navin@hotmail.com (N. Mahaseth).

https://doi.org/10.1016/j.amsu.2018.08.017
Received 8 December 2017; Received in revised form 21 May 2018; Accepted 8 August 2018

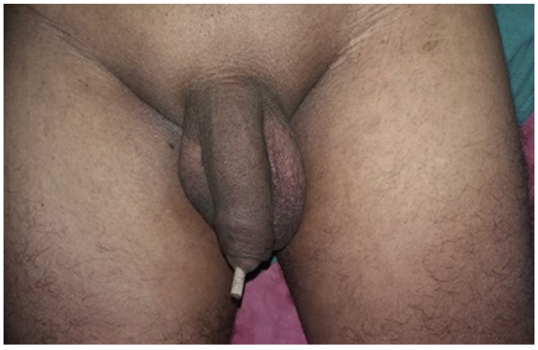

Fig. 1. Showing broken Foley catheter in situ.

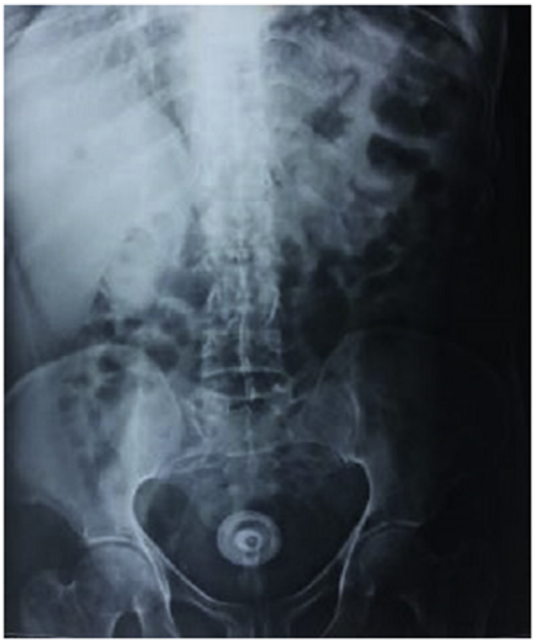

Fig. 2. Plain X-rays abdomen showing a massive encrustations with radiopacity surrounding the foley's bulb.

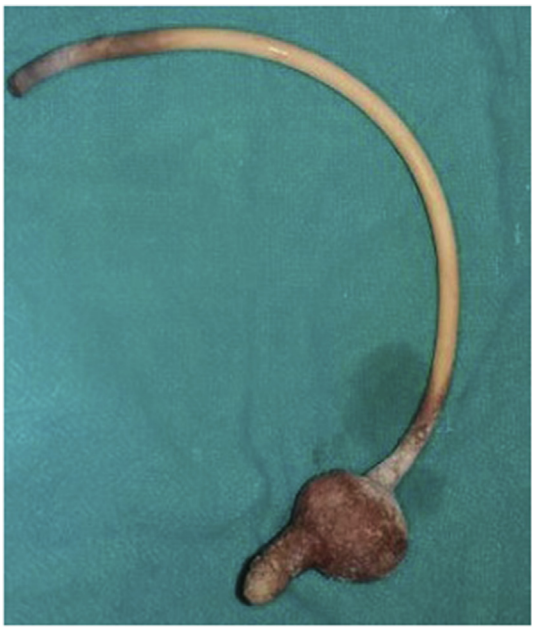

Fig. 3. Showing intact Foley catheter with encrusted bulb after removal.

Foley catheter in situ which had leakage of urine (Fig. 1). Digital rectal examination revealed enlarged and firm prostate. His respiratory, cardiovascular and neurological system were normal. Routine blood investigations were within normal range except slight increment in serum creatinine (1.5mg/dl). There was plenty of pus cells in urine microscopy. Removal of the Foley catheter was tried after deflation of catheter balloon with a syringe, but it did not succeed. Plain X-ray abdomen revealed a large encrustation with radiopacity surrounding the foley's bulb (Fig. 2). The patient underwent open suprapubic cystostomy. The intact Foley catheter with encrusted bulb was removed (Fig. 3). Third generations cephalosporin drug was continued for two weeks according to culture and sensitivity report. His postoperative period was uneventful. The catheter was removed after two weeks and he was passing urine normally.

3. Discussion

This case report highlights an unusual case with complication of long term indwelling urethral catheter. Urinary catheterization is frequently performed technique for draining urine in any medical or surgical illness as required. Use of indwelling catheters is mainly seen in chronically debilitated patients. Urinary tract infection, trauma to the urothelium, creation of false tracts, iatrogenic hypospadias and dislodgements are common problems that can occur with it [3]. Encrustation of Foley catheter is a pertinent problem which generally occurs in indwelling urinary catheterization for long period of time. Nearly 50% of the patients with long-term catheterization may develop this complication. However, the occurrence of massive encrustrations are very unusual.

In our case, a giant encrustations around the bulb of foley had developed in a patient who was carrying the catheter in situ for two and a half years. The patient had lost to follow up owing to his economic, geographical constrains and the lack of knowledge of the need to discard the catheter on time after follow up to the hospital. Adding to it, the accidental breaking of the catheter that made it easier for him to carry on his daily activities. He was so reluctant to visit the hospital that he even ignored the adverse impact it had on his sexual life.

Microrganism like bacteria in the urine make a biofilm on the surface of the catheter defending it from antibiotics and host defenses [4]. Once, infection develops in urine with urease making bacteria, most commonly *Proteus mirabilis*, the pH of the urine increases. This results in encrustations often composed of struvite (magnesium-ammonium-sulfate) or apatite (calcium-phosphate) [5]. The most usual clinical features presented due to catheter encrustation include lower urinary tract symptoms, pain, bladder irritability and urine retention because of blockage of catheter. Urosepsis, a life-threatening complication may occur if catheter is not timely removed [6].

There are no well-known methods to prevent bladder encrustations formation. However, it has been considered that increasing fluid and citrate intake could stop the encrustations. Few other important treatment approaches for preventing urinary catheter encrustation are, dietary modification, solution irrigation of the bladder and antibiotic usage for related urinary tract infection. Aseptic catheterization and sterile drainage systems help reduce entry of microorganisms into the bladder. This may decrease the encrustation of urethral catheter and stone formation. Regular changing of catheter, at least once in every three weeks is essential to reduce encrustations [7]. Inflation of the balloon with triclosan in patients in whom long-term indwelling catheterization is required may be beneficial given the fact that *Proteus mirabilis* is very sensitive to biocide triclosan. Acidifying the urine without removing the bacteria does not decrease encrustation. Proper antibiotic therapy for *Proteus mirabilis* should start immediately as soon as it appears in the urinary tract [8]. Intermittent balloon deflation and re-inflation to interrupt the formation of encrustations and bladder irrigation with an acidic solution are also recommended for long-term indwelling catheters [9]. Silicone catheters may be favorable for

patients who need indwelling catheters since they are more resilient to encrustation than other types and are smaller in size [10]. Last but not the least, proper patient education on catheter hygiene and treating the original cause of obstruction can be more effective in minimizing complications.

Surgical removal is only treatment of choice for unusual massive encrustations in long-term indwelling urethral catheter. Sever methods such as extracorporeal shock wave lithotripsy, intraluminal pneumatic lithotripsy, and surgical or endoscopic removal of catheter via suprapubic tract have been mentioned in literature [11]. Our patient had undergone open suprapubic cystostomy and removal of giant encrustations with intact Foley catheter.

4. Conclusion

Catheterization under aseptic condition, frequent catheter change, early treatment of infection, proper patient education on catheter hygiene are few methods that can reduce complications of longterm indwelling urinary catheter. Surgical removal is only option for the massive encrustations.

Sources of funding

No source of funding.

Authors' contributions

TRB- Study concept or design, data collection, literature search, writing paper, final decision to publish.

SS- Literature search, writing paper, final decision to publish.

NM - data collection, literature search, final decision to publish.

Ethical approval

As this is a case report, informed consent has been taken from the patient.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Research registration number

Is a case report.

Guarantor

Dr. Tika Ram Bhandari.

Competing interests

All authors declare that they have no competing interests.

Provenance and peer review

Not commissioned, externally peer reviewed.

Conflicts of interest

No conflict of interest.

Acknowledgements

We would like to thank our patient for allowing permission to publish the case.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.amsu.2018.08.017.

References

[1] A.-M. Leuck, D. Wright, L. Ellingson, L. Kraemer, M.A. Kuskowski, J.R. Johnson, Complications of Foley catheters—is infection the greatest risk? J. Urol. 187 (5) (2012) 1662–1666.

[2] R.A. Agha, A.J. Fowler, A. Saeta, I. Barai, S. Rajmohan, D.P. Orgill, et al., The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (2016) 180–186.

[3] G. Garg, V. Baghele, N. Chawla, A. Gogia, A. Kakar, Unusual complication of prolonged indwelling urinary catheter - iatrogenic hypospadias, J. Fam. Med. Prim. Care 5 (2) (2016) 493–494.

[4] A. Balasubramanian, A.R. Singh, G. Alagumuthu, Isolation and identification of microbes from biofilm of urinary catheters and antimicrobial susceptibility evaluation, Asian Pac J Trop Biomed 2 (3) (2012) S1780–S1783.

[5] K.A. Getliffe, A.I. Mulhall, The encrustation of indwelling catheters, BJU Int. 67 (4) (1991) 337–341.

[6] J.W. Warren, Catheter-associated urinary tract infections, Int. J. Antimicrob. Agents 17 (4) (2001) 299–303.

[7] D. Singh, P. Vasudeva, A. Goel, Egg shell" in bladder: a calculus around neglected Foley balloon catheter, Indian J Urol IJU J Urol Soc India 26 (2) (2010) 299.

[8] R. Wang, K.G. Neoh, E.-T. Kang, P.A. Tambyah, E. Chiong, Antifouling coating with controllable and sustained silver release for long-term inhibition of infection and encrustation in urinary catheters, J. Biomed. Mater. Res. B Appl. Biomater. 103 (3) (2015) 519–528.

[9] S. Rath, T.S. Mishra, P.K. Sasmal, S. Meher, Pericatheter encrustations: an unusual cause of a retained Foley catheter, BMJ Case Rep. 2016 (2016) bcr2015212379.

[10] S.K. Rahul, P. Raj, B. Tripathi, P. Kumar, S. Behera, S. Mohapatra, Management of retained Foley's catheter, J. Case Rep. 7 (1) (2017) 71–74.

[11] E.D. Canby-Hagino, R.D. Caballero, W.J. Harmon, Intraluminal pneumatic lithotripsy for the removal of encrusted urinary catheters, J. Urol. 162 (6) (1999) 2058–2060.