

190

Influence of biomaterial surface characteristics on encrustation of ureteric stents

Patrick F. Keane, Michael Tunney and Sean P. Gorman
Department of Urology, Belfast City Hospital, Belfast

Introduction: Biomaterial surface characteristics may determine the degree of encrustation on ureteric stents. This study correlates the hydrophobicity (measured by contact angle) and surface roughness of stents with the degree of encrustation.

Materials and methods: Silicone, polyurethane, hydrogel-coated polyurethane (HPU), silitek and perculflex were hydrated for 24h in deionized water; the advancing and receding contact angles were determined using a CAHN Dynamic Contact Angle Analyser. Atomic Force Microscopy (AFM) characterized the roughness of the surfaces. Sections (5 cm) were tested using an *in vitro* artificial urine model. Samples were removed at suitable intervals and the quantity of calcium, magnesium and phosphate deposited was determined by atomic absorption spectroscopy. AFM provided quantitative data on surface roughness with root mean square (Zrms) values.

Results: Table 1. Surface properties of ureteric stents.

Biomaterial	Advancing contact angle, mean (SE)	Receding contact angle, mean (SE)	Surface roughness, mean (SE)
Silicone	93.26 (0.25)	52.55 (0.62)	90.37 (4.64)
Polyurethane	96.65 (0.39)	63.44 (0.08)	100.84 (6.83)
HPU	41.97 (0.92)	42.32 (0.08)	62.48 (6.34)
Silitek	75.74 (0.30)	41.09 (0.07)	242.62 (24.34)
Perculflex	87.65 (0.13)	74.48 (0.12)	321.74 (28.78)

There was a positive correlation ($r > 0.85$) between increasing advancing contact angle and decreasing deposition of calcium and magnesium on the biomaterial surface. Surface roughness had no significant effect on encrustation.

Conclusion: Hydrophobic materials resist encrustation better than hydrophilic materials whereas surface roughness does not affect their ability to resist encrustation.

191

Modified laparoscopic colposuspension

S.Z. Zaidi, S.K. Sundaram and J. Cumming *Southampton University Hospital, Tremona Road, Southampton SO16 6YD*

Introduction: Genuine stress incontinence (GSI) in women has been treated with many modifications of the abdominal colposuspension. We have modified the minimally invasive technique of laparoscopic colposuspension and present this technique and our results.

Patients and methods: Twenty-seven women aged 33–73 years underwent laparoscopic colposuspension for urodynamically proven GSI; 42% had relapsed from previous incontinence surgery and 50% had previous pelvic surgery. The technique was based on retroperitoneal exposure, dissecting the bladder off the vagina under direct vision and then suspending it to the Cooper's ligament and secondarily to the rectus sheath. Inexpensive re-usable material was used.

Results: The mean hospital stay was 3.7 days and the patients were catheterized for 2 to 3 days. The mean follow-up period was 10.5 months and the overall success rate 73%.

Conclusion: The modified laparoscopic colposuspension is minimally invasive and cost-effective, with a short hospital stay. Taking into account the high number of relapsed and previously operated patients in this series, these results compare favourably with other surgical techniques for GSI.