THE SURGEON XXX (2017) 1–4

Available online at www.sciencedirect.com
ScienceDirect
The Surgeon, Journal of the Royal Colleges of Surgeons of Edinburgh and Ireland
www.thesurgeon.net

Correspondence: Letter to the Editor

Re: Cultural background, non-therapeutic circumcision and the risk of meatal stenosis and other urethral stricture disease: Two nationwide register-based cohort studies in Denmark 1977–2013

Keywords:
Male circumcision
Meatal stenosis
Urethral stricture disease
Epidemiology
Association study

We congratulate Frisch & Simonsen for investigating whether male circumcision (MC) is associated with meatal stenosis (MS) and other urethral stricture disease (USD) in a large Danish population.[1] Unfortunately, their paper is one-sided and key information was missing. The absence of values for incidence of each condition (as is the convention in epidemiological studies) makes interpretation of their findings difficult. We therefore calculated values for incidence (number of cases per subject per year) from their data on cases and person-years. We also calculated prevalence (number of cases per subject) after estimating number of subjects in each group.

In Part I of the study, we found each condition was rare, overall incidence of MS being 5.10/100,000 in uncircumcised males (ethic Danish and other non-Muslim) and 4.16/100,000 in Muslim (circumcised) males (Table 1). Overall prevalence of MS was 0.121% and 0.099%, respectively. For other USD, overall incidence was 34.8/100,000 and 23.2/100,000 in each respective group and overall prevalence was 0.82% and 0.55%, respectively. These figures were higher in uncircumcised males, although the difference was only statistically significant for other USD.

Prevalence of MS and other USD was highest in males over 60 years of age (63.6% and 66.9% of all cases, respectively). In elderly men MS in the uncircumcised was 1.9 times higher than in circumcised men. But for other USD, rate was not significantly different between uncircumcised and circumcised elderly men. MS in males aged 0–39 years was 1/10th that in elderly men and for other USD was 1/20th (Table 1). Only in boys aged 0–9 years was MS significantly higher (by 3.3-fold) in Muslims. Most circumcisions of Muslims take place in childhood, involve non-medical (traditional) circumcisers, so are not recorded in Denmark. For other USD, rate was slightly, but significantly, higher in circumcised males under age 60. A test for trend in rate with increasing age revealed no significant difference overall between uncircumcised and circumcised males.

The rarity of MS and other USD was further confirmed in our calculations for Part II of their study (Table 1). Part II involved national records for "non-therapeutic" MC of non-Muslim Danish males aged 0–36 years. MC rate was 0.42%. Overall, in Part II, rate of each condition was significantly higher in circumcised males. However, for MS, number of cases in each age group of circumcised males was very low, e.g., 4, 1 and 1 amongst circumcised boys aged 0–9, 10–19 and 20–36 years. We therefore question the reliability of the hazard ratios generated. Comparing the overall relationship with age in Part I and Part II, it seems that the association with MC reverses in older men.

MS and USD may be contributed by penile inflammatory conditions (especially lichen sclerosis), and urinary tract infections, each of which is more common in uncircumcised males, and in the elderly. USD can also result from trauma and urethral infections such as sexually transmitted urethritis. Exposure to ammonia in a urine-soaked diaper has been said

Please cite this article in press as: Morris BJ, Krieger JN, Re: Cultural background, non-therapeutic circumcision and the risk of meatal stenosis and other urethral stricture disease: Two nationwide register-based cohort studies in Denmark 1977–2013, (2017), http://dx.doi.org/10.1016/j.surge.2017.08.001

Table 1 – Derivation of annual prevalence figures for MS and other USD in uncircumcised and circumcised males resident in Denmark for at least one day between Jan 1, 1977 and Nov 30, 2013 (av. 23.8 years).

Part I.	Uncircumcised		Circumcised
	Ethnic Danish males	Other males (non-Muslim)	Muslim males
	Number of cases over total years/total males in group (annual incidence[a])		
Meatal stenosis			
Age 0–9 years	198/398,382 (2.09/100,000)	38/83,479 (1.91/100,000)	40/24,930 (**6.75**/100,000)
	Uncircumcised combined = 236/481,861 (**2.06**/100,000)		
	OR = 0.305 (0.218–0.426; Bonferroni-corrected $P = 7.3 \times 10^{-8}$)[c]		
Age 10–19 years	189/449,278 (1.77/100,000)	24/71,826 (1.41/100,000)	14/20,110 (**2.93**/100,000)
	Uncircumcised combined = 213/521,105 (**1.72**/100,000)		
	OR = 0.587 (95% CI 0.342–1.01; P = NS)[c]		
Age 20–39 years	388/1,009,104 (1.62/100,000)	45/131,467 (1.44/100,000)	23/37,484 (**2.58**/100,000)
	Uncircumcised combined = 433/1,140,571 (**1.60**/100,000)		
	OR = 0.619 (95% CI 0.407–0.941; Bonferroni-corrected P = NS)[c]		
Age 40–59 years	861/971,483 (3.73/100,000)	59/70,466 (3.52/100,000)	20/19,894 (**4.23**/100,000)
	Uncircumcised combined = 920/1,041,949 (**3.71**/100,000)		
	OR = 0.878 (0.564–1.37; P = NS)[c]		
Age 60+ years	2860/705,346 (17.1/100,000)	89/25,357 (14.8/100,000)	8/3775 (**8.91**/100,000)
	Uncircumcised combined = 2949/730,703 (**17.0**/100,000)		
	OR = 1.91 (0.953–3.82; P = NS)[c]		
All ages combined	4496/3,533,594 (5.35/100,000)	255/382,594 (2.80/100,000)	105/106,193 (**4.16**/100,000; 0.0989%)
	Uncircumcised combined = 4751/3,916,188 (**5.10**/100,000; 0.121%[b])		
	OR = 1.23 (1.01–1.49; Bonferroni-corrected P = NS)[c]		
Other USD			
Age 0–9 years	496/399,426 (5.24/100,000)	93/83,697 (4.69/100,000)	76/24,991 (**12.8**/100,000)
	Uncircumcised combined = 589/483,123 (**5.14**/100,000)		
	OR = 0.401 (95% CI 0.315–0.508; Bonferroni-corrected $P = 1.1 \times 10^{-9}$)		
Age 10–19 years	606/450,374 (5.67/100,000)	139/71,991 (8.14/100,000)	47/20,147 (**9.84**/100,000)
	Uncircumcised combined = 745/522,365 (**6.01**/100,000)		
	OR = **0.611** (95% CI 0.455–0.820; Bonferroni-corrected P = 0.011)[c]		
Age 20–39 years	2799/1,010,894 (11.7/100,000)	403/131,683 (12.9/100,000)	162/37,543 (**18.2**/100,000)
	Uncircumcised combined = 3202/1,142,577 (**11.8**/100,000)		
	OR = 0.648 (95% CI 0.554–0.760; Bonferroni-corrected $P = 2.8 \times 10^{-6}$)[c]		
Age 40–59 years	5519/971,943 (23.9/100,000)	360/70,481 (21.5/100,000)	173/19,868 (**36.7**/100,000)
	Uncircumcised combined = 5879/1,042,424 (**23.8**/100,000)		
	OR = 0.646 (95% CI 0.555–0.752; Bonferroni-corrected $P = 6.8 \times 10^{-7}$)[c]		
Age 60+ years	21,140/700,451 (127/100,000)	726/25,163 (122/100,000)	126/3729 (**142**/100,000)
	Uncircumcised combined = 21,866/725,614 (**127**/100,000)		
	OR = **0.888** (95% CI 0.743–1.06; P = NS)[c]		
All ages combined	30,560/3,533,088 (36.5/100,000)	1721/383,015 (18.9/100,000)	584/106,278 (**23.2**/100,000; 0.550%)
	Uncircumcised combined = 32,281/3,916,103 (**34.8**/100,000; 0.824%[b])		
	OR = **1.50** (95% CI 1.39–1.63; Bonferroni-corrected $P = 1.5 \times 10^{-24}$)[c]		

Part II.	Uncircumcised	Circumcised	OR (95% CI)	P (Bonf-corr)[c]
	Number of cases over 37 years/total males in group (annual incidence[a])			
Meatal stenosis				
Age 0–9 years	98/358,623 (1.25/100,000)	4/807 (22.6/100,000)	18.2 (6.69–49.6)	0.00036
Age 0–19 years	50/281,039 (0.0.812/100,000)	1/1291 (3.53/100,000)	4.36 (0.601–31.6)	NS
Age 20–36 years	28/167,705 (0.762/100,000)	1/1253 (3.64/100,000)	4.78 (0.65–35.2)	NS
Total	176/807,368 (0.995/100,000)	6/3351 (8.17/100,000)	8.23 (3.64–18.6)	0.00050
Other USD				
Age 0–9 years	351/358,741 (4.47/1000,000)	8/806 (45.3/100,000)	10.2 (5.06–20.7)	7.6×10^{-6}
Age 0–19 years	330/281,039 (5.36/100,000)	10/1287 (35.5/100,000)	6.66 (3.54–12.5)	1.9×10^{-5}
Age 20–36 years	384/167,597 (10.5/100,000)	8/1248 (29.3/100,000)	2.81 (1.39–5.67)	0.038
Total	1065/807,378 (6.02/100,000)	26/3341 (35.5/100,000)	5.94 (4.02–8.78)	9.5×10^{-12}

[a] Annual incidence was calculated by dividing number of cases by the person-years figures in Frisch & Simonsen's Tables.
[b] Prevalence (number of cases per subject).
[c] Statistical analyses involved Fisher's exact test. OR, odds ratio for uncircumcised vs. circumcised; P values were corrected for multiple testing by the Bonferroni method (×6 in Part I and ×4 in part II). NS, not significant ($P > 0.05$). Bold values depict annual incidence, with bold being used for clarity.

Please cite this article in press as: Morris BJ, Krieger JN, Re: Cultural background, non-therapeutic circumcision and the risk of meatal stenosis and other urethral stricture disease: Two nationwide register-based cohort studies in Denmark 1977–2013, (2017), http://dx.doi.org/10.1016/j.surge.2017.08.001