

PROSPECTIVE EVALUATION OF URETHRO-VESICAL, VULVO-VAGINAL AND ANO-RECTAL FUNCTION AFTER TOTAL MESOMETRIAL RESECTION (TMMR) IN CERVICAL CANCER

Aims of Study

Damage of the pelvic autonomic nerve system at various sites during Wertheim-Meigs radical hysterectomy may lead to postoperative long-term impairment of pelvic visceral functions. We developed total mesometrial resection (TMMR) with extended pelvic/periaortic lymph node dissection not only to improve oncological and functional outcome in patients with early stage cervical cancer. One feature of this novel surgical procedure is the exposure and preservation of the essential parts of the autonomic nerve system supplying the pelvic viscera at the sites of resection.

Methods

A prospective longitudinal study to evaluate urethrovesical, vulvovaginal and anorectal function of patients undergoing TMMR was carried out with assessment of pre-, and postoperative (at 3, and at 12 months) symptoms using a standardised questionnaire, clinical and urogynecological investigations.

From 7/1998 until 7/2002 71 patients with early stage cervical cancer were treated with TMMR. Pre- and postoperative urogynecological assessment comprised exclusion of urinary tract infection, residual urine measurements, uroflowmetry, filling cystometry, urethral pressure measurements (Andromeda, Unterhaching), a clinical stress test in the lying and supine position, and introital ultrasound (Toshiba).

Forty-seven patients treated with TMMR during the first three years (7/98 – 7/01) were eligible for the prospective longitudinal evaluation of TMMR related disturbances of the lower urinary, genital and intestinal functions.

Results

71 patients with cervical cancer stages (y)pT1b1 (n=48), (y)pT1b2 (n=8), pT2a (n=3), (y)pT2b (n=12) underwent TMMR without (neo)adjuvant radiation. Mean pathological tumor size was 2.7 ± 1.6 cm. Twenty percent of the patients had (y)pN1, 4% (y)pM1(LYM) stages. Fifty-four percent of the patients exhibited histopathological high risk factors. At a median observation period of 26 months two patients relapsed locally, two patients developed pelvic and distant and two patients only distant recurrences. Grade 1 and 2 complications occurred in 15 resp. 5 patients, no patient developed grade 3 or 4 complications.

Clinical investigation revealed an increase in the number of patients with grade I stress incontinence from 5 of 31 preoperatively to 8 of 31 twelve months postoperatively. Three patients presented with residual urine >50 ml 12 months after TMMR treatment as compared to zero preoperatively. Maximum residual urine measured was less than 100 ml. The results were not statistically significant. Median residual urine volume increased from 10 ml to 21 ml after 3 months and 20 ml after 12 months ($p = 0.007$). Urodynamic testing showed no significant changes after TMMR treatment with respect to most of the parameters representing lower urinary tract function such as bladder compliance, detrusor pressure, urine flow rate and functional urethral length. However, statistically significant alterations were detected for bladder volume, voiding time and urethral closure pressure. The bladder volume at first desire to void increased from 279 ± 79 ml preoperatively to 355 ± 92 ml at one year postoperatively, the micturition time from 45 ± 17 sec to 56 ± 8 sec and the urethral closure pressure from 65 ± 20 cm H₂O to 74 ± 20 cm H₂O. For these parameters the pairwise comparisons preoperative with postoperative 12 months after TMMR were significant. One year after TMMR 3 of 25 patients experienced a reduced bladder filling sensitivity compared to one patient before the operation. Twelve patients voided with abdominal straining to empty their bladder completely one year after the operation, whereas this micturition aid was used

only by 6 patients preoperatively. No marked changes in sensory urgency and nocturia became evident from the questionnaire investigation.

More patients perceived reduced vaginal elasticity than reduced vaginal length as sequelae of the surgical treatment. Vaginal lubrication was not altered by TMMR according to the patients' estimation. The relative number of sexually active patients after 12 months was the same as preoperatively.

Treatment with TMMR did not lead to apparent alterations in anorectal functions according to the patients' self estimation

Conclusions

The preliminary results of our prospective longitudinal study support the concept and feasibility of TMMR to expose and preserve pelvic autonomic nerves during extended radical hysterectomy and pelvic/periaortic lymph node dissection.

Our study could not detect major postoperative disturbances of urethrovesical, vulvovaginal and anorectal functions related to autonomic innervation.

Irrespective of the results with TMMR our prospective longitudinal study confirms the importance of preoperative investigation of patients with cervical cancer in order to evaluate therapy related effects on pelvic visceral functions.