RADICAL PROSTATECTOMY: A COMPARISON IN TECHNIQUES

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A few lines are due to thank the President Professor Sara Ferri, Professor Mario Comporti and the Board of Directors of the Accademia dei Fisiocritici who has agreed to the proposal to invite me to come here today to expose, together with Fabio Maria Mattei, the technical developments of the radical prostatectomies. For many years I have shared with him the urological activity in the University Hospital of Siena setting up definitely in between 1978 and 1988 the surgical modern treatment of many malignancies of the urinary tract. At that time we both have also organized, along five years, Audiovisual Meetings on those topics, pioneering, in our Country, the modern teaching communication methods. That's why it is for me a great honour and pleasure as well to take the opportunity of commemorating our Colleague Leonetto Comparini. Professor of Human Anatomy at the University of Siena who lended generously to me his Lecture-hall equipped for distant visual communication. Mattei and I have chosen to present today the surgical modern treatment of the malignancies of the prostate because, coming first in our Country, obviously early convinced of its importance, we have pioneered (Controversies in Urology, Meeting organized by V.Pansadoro in Fiuggi, Italy 1987: Presentation of 10 cases of Radical "nerve sparing" Retropubic Prostatectomy) the technique of Radical Retropubic Prostatectomy as done today everywhere after it had been proposed by P.C.Walsh, Urologist at Johns Hopkins Hospital in Baltimore, MD USA(Cancer,45:1906-1911,1980). Now the minimal invasive techniques of radical prostatectomies, saving the urinary continence and sexual potency, have come to the revival of surgical treatment of prostatic cancer neglected for many years.

Early cancer of the prostate, if lymphnodes are not involved and there are no distant metastases calls for "radical" surgery of the gland (pelvic lymphadenectomy included) as the true eradicative treatment for Patients if they are good candidates (age, general conditions, etc) to major surgery. It has to be stressed the enormous advancement in the field of prevention and early diagnosis mainly improving the fate of the Patients aged of 45-65 years almost always asymptomatic but ideal candidates to healing surgery. Everyone knows the actual benefit of detecting in serum the Prostatic Specific Antigen (PSA, total, free and ratio) whose pathologic values can impose the ultrasound guided multifocal needlebiopsy of the gland. Ultrasound scanning of the prostate, abdominopelvic TAC and RNM show their usefulness in evaluating the possible extraprostatic diffusion of the disease and giving all the important details for correct and better therapy. Any way no therapy is allowed of course, no matter whether medical or surgical, until the histologic evidence (Gleason "score") of malignancy is achieved. Total body bone scanning is necessary to rule out distant metastases very often present even for small tumors. Today we can treat and cure surgically neoplasies confined to the gland.

It is really incredible that until few decades ago Urologists were faced with the problem to treat with no great success, Patients with advanced disease because the diagnose was based only on Digital Rectal Examination and the serum dosage of Acid Phosphatase. That's why the surgical radical treatment formerly has been neglected being hormonotherapy with estrogens or RhGn analogues the only valuable safe treatment for bulky widespread tumors.

The progress in diagnostic tools has been followed by concomitant progress of the "radical" retropubic prostatectomy and the total perineal prostatectomy At least two points deserve to be focused upon:

First attention payed to the important anatomical details deeply investigated at level of endopelvic and periprostatic fascia, of Santorini's venous plexus and the nervous supply to both bladder neck

and cavernous bodies and to the branches emerging from the pelvic autonomic nervous plexus lying between bladder neck and rectal wall. Thanks to these studies the ablation of the prostate can be done in an extracapsular and subfascial radical way saving the above mentioned structures avoiding important blood loss, with no risk of permanent urinary incontinence , minimizing the risk of sexual permanent impairment. Such drawbacks in the old past hindered the "wide field" surgery of the prostate obviously imposed by the devastating local spreading of the disease;

secondly "radical" retropubic prostatectomy can be done today with laparoscopic access eluding abdominal incisions and postoperative pain, reducing also hospitalization and recovery time. Still more advantages has the more advanced robotic surgery because of the three-dimensional view and excellent coordination eye-hand obtaining a superhuman accuracy mainly if a camera introduced in the abdomen, as recently proposed, adds information during the procedure. It is of paramount interest to say that the technique of "radical" prostatectomy inside of the pelvis area no matter whether open or covert, procedure follows the same logical steps each differing from

the others for trivial details.
PC Walsh of Johns Hopkins Hospital, Baltimore,MD and WF Fair of Memorial Sloan-Kettering Cancer Center of New York NY USA have been the leaders of the anatomical studies setting up the improved surgical techniques to reduce the blood loss and to save nervous supply to the membranous urethra, to the pelvic floor and to the cavernous bodies. Their remarkable merit is also to have pointed out that Patients reluctant to surgery must be addressed to valuable alternative therapy even non eradicative but useful. Actually also for Patients aged over 70 the problem is, for obvious reasons of "life expectancy", to slow up the course of an already slow "per se" illness probably avoiding frequent fractures from painful bone metastases and obstructive urinary symptoms.
The modern "radical" prostatectomy is really a conquest for the Urology and consequently Mattei and I at University Hospital of Siena, Italy have contributed, since 1985, to the technical advancement of the procedure to improve the functional outcome We presented at Meeting "Controversies in Urology" Fiuggi September 1987 ten cases of Radical Retropubic Prostatectomy, "nerve and bladder neck sparing" suggesting precautions in order to reduce further the intraoperative bleeding (temporary clamping of the anterior branch of hypogastric arteries, transfixed stitching after clamping of Santorini's venous plexus at the level of the pubic arch, Trendelenburg's posture during the ablation of the prostate). Consequently in our hands, over a period longer than ten years intraoperative blood transfusions are not needed.. The second change we have added to Walsh's procedure is to renounce almost always today to perform a stitched vesicourethral anastomosis because in our opinion in tightening the sutures is often possible the pulling out of the membranous urethra whose saving is essential to prevent urinary continence. The "sutureless" vesicourethral anastomosis (Acconcia et Al. The American Journal of Urology Review; 1:93-96, 2003) implies the insertion of two lateral stitches on the bladder neck then transfixing the perineum and there tightened in order to ensure the approximation of the bladder neck to the urethra granting the restoration of the urinary outlet. In our hands this procedure has really resolved the problem of permanent incontinence a not rare sequela of the standard technique.
Now retropubic radical prostatectomy, no matter whether open or covert, can be done in an antigrade fashion (starting from the bladder neck) or in a retrograde one (starting from the urethra) after the opening of the endopelvic (periprostatic) fascia just aside of the prostatic apex and clamping of Santorini's venous plexus. The distinctive characteristic of covert (laparoscopic or robotic) surgery we can find is that the gland can be approached both extra-or-intraperitoneally. We prefer the retrograde open procedure cutting the urethra at the prostatic apex and then stitching the capsular vessels close to the prostatic capsule so saving the cavernous neurovascular bundles. The anterior aspect of the bladder neck is now opened the following step being the section of the posterior aspect of the bladder neck.At that level one can see the seminal vesicles and the deferents that should be gently detached from the posterior wall of the bladder and from the Denonvillers fascia. The last step in our hands is to perform the "sutureless" vesicourethral anastomosis or to perform a conventional one.
Different access is required of course for total perineal prostatectomy an excellent way in specific cases such as elderly Patients, obese Patients, respiratory Patients, Patients previously submitted to major abdominal surgery or enterostomized ones,Patients without any evidence of pelvic lymphnodes involvement. The procedure needs particular position of the subject the so-called exaggerated lithotomy position but as soon as the perineotomy (we follow the Wildbolz/Proust route) has showed the posterior aspect of the gland the steps of prostatic ablation are similar to the steps of retropubic approach. It is definitely possible to perform also in this procedure an extracapsular-subfascial procedure saving the neurovascular bundles and reducing the blood loss because the Santorini's venous plexus is put aside. Undoubtedly the vesicourethral anastomosis is easier in this procedure than in retropubic. Mattei and I have contributed to exploit the advantages of the perineal total prostatectomy mainly in selected cases because of reduced surgical risk even with the same oncological and functional outcome (Paulson DF, J.Urol., 118:504-506, 1982).
The drawback of this procedure is that it ask for longer training time and expose to the risk of rectal injury in not experienced hands.
So radical prostatectomy whatever the technique, is a major potentially curative procedure in the treatment of organ confined prostate malignancy It is also undeniable that in recent years the laparoscopic (mainly transperitoneal) procedure has become popular because minimally invasive, reducing postoperative pain and recovery time. In terms of oncologic and functional (urinary continence and sexual potency) outcome the results are similar to that of open surgery.. But the fact remains that the learning curve is long and "it is to be emphasized that only a long term stay of at least 3 months in training may guarantee the adequate safe transfer to expertise" (J.Rassweiler, Heilbronn, Germany). We would like also to stress the economic side in setting up the laparoscopic equipments. There is no doubt that robotic surgery offers more advantages than laparoscopic also in terms of a shorter learning curve. We know that today in U.S.A. 60% of radical prostatectomies are done as robotic surgery. But we are sceptic about the economic feasibility of such a revolutionary and brilliant technical/technological technique at any Health Care Institute all over the world.
In conclusion we really are convinced that holding back progress is a stupid attitude. Consequently we think that in the next future radical prostatectomies will be done mainly as laparoscopic or robotic surgery but, for obvious reasons we still consider unavoidable at least at present , to train new generation of surgeons to open surgery.