USEFUL INFORMATION FOR PATIENTS THAT HAVE BEEN DIAGNOSED WITH PROSTATE CANCER AND ARE ELIGIBLE FOR ROBOTIC RADICAL PROSTATECTOMY

(ROBOT-ASSISTED RADICAL PROSTATECTOMY WITH DA VINCI® Xi SYSTEM)

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QUID EST HOMO?

Dear Patient,

After a careful evaluation of your case, you have been deemed eligible for radical prostatectomy.

We are glad that, for your surgery, you have chosen our Department, where approximately 700 radical prostatectomies are performed every year. The experience we have gathered over the years on this type of surgery makes the San Raffaele Hospital one of the top institutions in the field.

Additionally, in our research hospital we have conducted many studies (and many are ongoing) on what are the major determinants of postoperative outcomes such as urinary continence and erectile function.

In a holistic approach, we have developed a path that begins before surgery and continues after.

We hope that this reinforces your trust in our Department and our Team and that these aspects reassure you.

In this document, we summarize essential information that will help to make your hospital stay, and subsequent complete recovery, as short as possible.

PRE-SURGICAL ASSESSMENT

Before surgery, your overall health status will be carefully evaluated and, in general, the following examinations will be performed or ordered:

- **Laboratory blood tests**
- **Electrocardiogram and cardiological examination**
- **Anesthesiologic assessment**, during which:

1. The suitability for surgery is ascertained
2. Additional exams or other physician evaluations may be ordered
3. Any changes in, or suspensions of, chronic therapies are agreed upon

- **Chest x-ray** (if the patient has not recently undergone a chest CT scan)
- **Optical exam with visual field**: this will be required only if the patient has severe myopia, has had a recent eye trauma or has uncontrolled glaucoma in the months before surgery.

These assessments are performed either in our hospital before admission or upon admission on the surgical ward.

We are glad to inform you that the need for blood transfusions is nowadays extremely low thanks to robotic surgery.
Yet, it is extremely important to inform us whether you are taking any anti-platelet or anti-coagulant ("blood thinners") medication. The suspension and/or replacement with other medications must be determined by your physician or by the anesthesiologist before surgery. These medications might increase the risk of intraoperative bleeding and their suspension or titration have to be carefully examined before surgery.

In some cases, it may be necessary to replace oral anti-coagulants ("blood thinners") with low molecular weight heparin (injections). The anesthesiologist or coagulation specialist from our hospital will advise you in this regard.
If you do not inform us on time about these medications and they are subsequently not interrupted on time, the surgical procedure will have to be postponed, thus wasting precious time for your health!

A cardiological evaluation, in the 30 days prior to surgery is required.

PREPARING FOR SURGERY: TOWARD YOUR IDEAL WEIGHT

In order to facilitate the execution of the surgical procedure and to optimize outcomes in terms of complete removal of the tumor while preserving the anatomical structures responsible for urinary continence and erectile function, it is imperative that you reach a body weight that is as close as possible to your ideal one.

In the modern society, almost all patients are more or less overweight at baseline. A patient's weight category can be understood by his Body Mass Index (BMI).

If You have a BMI greater than 24.9 kg/m^2, it is advisable to schedule a nutritional consultation to set up a dietary plan ultimately aimed at reaching your ideal weight. Weight loss will determine greater technical ease in performing surgery, ultimately affecting both the short- and long-term outcomes!

Please, keep in mind that nutritional evaluations and treatments MUST always be personalized. Below is an example of an ideal low-calorie balanced diet for a 65-year-old patient who is 1.75 m tall and overweight.

Breakfast, about 15% of daily kcals	
Oat milk	150g
A cup of tea/coffee	60g/200g
Whole grain cereal	40g
Fruit jam without added sugars	25g
Fruit	150g
Snack, about 10% of daily kcals	
Walnuts or almonds	10g
Fruit	150g
Lunch, about 35% of daily kcals	
Pasta, rice or cereal Extra virgin olive oil Parmesan cheese	80g 10g 10g

Vegetables Extra virgin olive oil	200g 10g
Snack, about 10% of daily kcals	
Fruit	150g
Crackers, breadsticks, or whole grain croutons	25g
Dinner, about 30% of daily kcals	
White meat/fish Potatoes Extra virgin olive oil	150g/200g 150g 5g
Vegetables Extra virgin olive oil	200g 10g
Whole wheat bread	50g

We also recommend that you exercise regularly and, in particular, that you engage in at least 40 minutes of moderate aerobic physical activity every day.

Consult your physician relatively to this dietary advice, particularly if you suffer from diabetes or any cardiovascular disease.

A consultation with a Registered Dietitian (RD) is an integral part of our program for preparing patients for robotic radical prostatectomy. This consultation must take place as soon as possible.

FROM PROSTATE BIOPSY TO SURGERY

Radical prostatectomy is generally performed within 4 to 8 weeks after prostate biopsy and, generally, not earlier than 12 weeks after having received any operation on the prostate such as HoLEP or TURP.
These time intervals are required to resolve any inflammatory adhesions and/or hematomas in the prostate, thus allowing the anatomy of the gland to return to its normal status. This is particularly important for patients who are eligible for the preservation of the neuro-vascular bundles involved in the control of erectile function and urinary continence.

ANESTHESIA

The day before surgery, you must lead a normal life and eat as usual until the evening.
Robotic radical prostatectomy is performed under general anesthesia. Pre-anesthesia medications will be administered before you are taken to the operating room, allowing the patient to feel calm and serene.
Simultaneously, intravenous administration of analgesic drugs (preventive analgesia) is started and will be continued through the post-operative setting for approximately 24 hours. Pain control at this point is generally optimal, allowing patients to quickly overcome the surgical trauma. The pain associated with robotic-assisted surgery is usually minimal, thanks to the absence of muscle incisions. In the postoperative setting, a slight muscle and joint pain may be felt due to the patient's position on the operating table, a problem easily resolved with analgesic drugs and early mobilization.
Rarely, in the first twenty-four hours after surgery, localized pain may arise in the shoulder blades. This pain is transitory and bears no consequences. It is generally due to presence of carbon dioxide, used to create the intra-operative pneumoperitoneum, in the pleural space.
A prophylaxis for nausea and vomiting is also administered during surgery to prevent any post-surgical discomfort. Yet, nausea and vomiting are rare after this type of minimally-invasive procedure.
The minimal invasiveness of this surgical technique usually allows patients to start drinking, eating and moving on the evening following surgery.
The prevention of thrombotic and thromboembolic phenomena is carried out with the use of elastic stockings placed on the lower limbs before

surgery, by subcutaneous administration of low molecular weight heparin starting on the evening following surgery, and by early mobilization of the patient. Each of these procedures allow for the rapid recovery of patient's physical and mental status, minimizing the consequences of surgical stress. The appropriateness of low molecular weight heparin injections is evaluated case-by-case according to the present guidelines for thromboprophylaxis.

The Consultation with our anesthesiology team is an important part of our pre-operative assessment and it must take place as soon as possible. It will be organized for you by our Urology admission office at San Raffaele Hospital.

SURGICAL TECHNIQUE

The first surgical step consists in the creation of the pneumoperitoneum: the abdominal cavity must be filled with carbon dioxide to create a working chamber for the robotic surgical instruments.

An incision about 2 cm above the umbilicus allows for the placement of the first robotic trocar, which is done under direct vision, and serves to insert the small camera that the surgeon will use to operate. Other five operative trocars are then inserted into the abdominal cavity. Three of them are typically managed by the first surgeon and two by the surgical assistant.

Although it is an extremely rare occurrence, it is possible that the robotic trocars cannot be positioned due to the presence of numerous and tenacious intestinal adhesions and it is therefore necessary to change surgical approach, converting from robotic to open surgery.

It is important to understand that the robotic technique provides the surgeon with a visual magnification of up to 20 times and a 3-dimensional vision. This allows the operator to appreciate the depth of the surgical field, which is not possible with the classic laparoscopic technique. The intraoperative robot-assisted vision helps the surgeon to see even the smallest anatomical detail and therefore to perform surgery with a significantly higher accuracy than the classical open or laparoscopic approaches.

The first surgical step is the isolation of the seminal vesicles through a small breach performed in the parietal peritoneum that covers the Douglas

cavity, above the rectum. This step allows a perfect visualization of the seminal vesicles and the blood vessels and nerves that surround them. These nerves are directed to the corpora cavernosa of the penis and they are responsible for erectile function.

If necessary, for oncological reasons and according to pre-operative parameters, the pelvic lymph nodes (which drain the lymph produced by the prostate) are removed bilaterally (lymphadenectomy).

During the process of prostate carcinogenesis, it is possible that some malignant cells leave the organ and are then captured by the nearest lymph nodes. For this reason, in some patients with prostate cancer, the removal of the lymph nodes is performed for its potential therapeutic value and to obtain a more accurate disease staging. The choice of whether to perform a lymphadenectomy is based on the use of predictive risk models called nomograms that have been developed by our group (Briganti nomograms).

We therefore proceed with the section of the venous plexus of Santorini and its subsequent hemostatic suture. This procedure is carried out with the utmost attention in order to preserve the integrity of the external urethral sphincter, the main muscle responsible for urinary continence.

The removal of the prostate occurs using an antegrade technique, starting from the bladder neck, which is separated from the base of the prostate.
Once this maneuver is completed, the previously isolated seminal vesicles are reached, and the surgical plan between prostate and rectum is identified starting from the 6 o'clock position.
Depending on tumor characteristics (presence of palpable disease at digital rectal examination, percentage of positive biopsies for cancer, aggressiveness of the tumor detected through biopsies - Gleason score, preoperative PSA, results of magnetic resonance imaging), an intra-fascial (extremely adherent to the prostatic capsule), inter-fascial (slightly more distant from the prostate capsule, but always with the utmost attention to the safeguarding of the nerves that surround the prostate) or extra-fascial technique (usually necessary in cases of advanced tumor) is carried out.

Prostate isolation is performed with the utmost attention, avoiding the use of any thermal energy which may damage the peri-prostatic nerves.
In some patients whose prostate cancer has been determined (either pre- or intraoperatively) to involve the neuro-vascular bundles, the latter must be

necessarily sacrificed to allow for the radical removal of the tumor and reduce the risk of positive margins after histological examination. In these cases, the resumption of penile erection can be very slow or can occur a permanent damage.

The urethra is then dissected at the prostate apex level and the completely freed prostate is placed in a small bag and extracted from the abdomen through an abdominal incision. If necessary, an intraoperative histological examination is performed on frozen specimens to assess the integrity of the prostate surgical margins.

The urethra-bladder anastomosis is performed with a continuous suture that guarantees an excellent seal and a rapid recovery of urinary continence. A bladder catheter is positioned, and an anastomosis leak test is performed.

In some selected cases (less than 5% in the last 1000 cases), it may be necessary to place a small drainage tube in the pelvic space to evaluate for any urine or lymph leaks. Drainage tubes are usually removed the day after surgery.

The technique allows to perform unilateral or bilateral neuro-vascular bundle preservation. The possibility of preserving them depends on the anatomy of the patient, the oncological situation, the possible extension of prostate cancer, or the surgical factors that determine the technical possibility of carrying out this approach.

Usually, six hours after surgery, patients can progressively resume drinking and eating. Generally, it is advisable that patients walk as soon as they feel able to. In fact, this favors the resumption of normal blood flow, avoids the formation of thrombi ("clots") in the veins of the lower limbs and it facilitates the resumption normal bowel activity.

AS A GENERAL RULE, THE PATIENT MUST BE BEDRIDDEN FOR THE SHORTEST AMOUNT OF TIME!!!

The bladder catheter, which is placed during surgery, is kept in place for a period usually varying from 5 to 10 days, depending on the local intra-operative conditions and the post-operative course. On rare occasions, it may be necessary to keep the bladder catheter in place for a longer period of time, but generally no more than 3 weeks.

HOSPITALIZATION ON THE WARD MUST BE LIMITED TO THE MINIMUM LENGTH OF TIME IN ORDER TO REDUCE AS MUCH AS POSSIBLE THE RISK FOR PATIENTS TO CONTRACT A NOSOCOMIAL INFECTION!!

THIS MEANS THAT, STARTING FROM THE SECOND POSTOPERATIVE DAY, AS SOON AS THE GENERAL CONDITIONS ALLOW IT, PATIENTS ARE DISCHARGED FROM THE HOSPITAL EVEN IF THE BLADDER CATHETER OR THE DRAINAGE TUBE ARE STILL IN PLACE!

The patient who is discharged from the hospital with a drainage tube or a bladder catheter will receive an appointment to return to our clinics after a few days to remove them. **IT IS NECESSARY FOR THE PATIENT TO STAY IN MILAN WHEN THE BLADDER CATHETER IS STILL IN PLACE!**

ONCE THE BLADDER CATHETER IS REMOVED, IT IS IMPERATIVE THAT THE PATIENT REMAINS IN MILAN FOR AT LEAST 24 HOURS. This is due to the fact that in this period of time an inability to resume urination spontaneously or a painful abdominal syndrome due to urine leakage in the peritoneal cavity may arise. In our case history these events occur in about 5% of cases and they are resolved through the re-placement of the bladder catheter.

INFORMATION ABOUT HOTELS LOCATED NEAR THE HOSPITAL WHERE THE PATIENT (AFTER BEING DISCHARGED) AND HIS FAMILY CAN STAY WILL BE PROVIDED BY OUR OFFICES. THE CLOSEST ONES ARE:

1. Hotel Rafael Via Olgettina, 60 - 20132 Milan Tel. +39 02 21765.1 - Fax. +39 02 21765888 - inside the San Raffaele campus - rafaelhotel.it
2. NH Hotel in Milan 2 Via Fratelli Cervi - Milan 2, Segrate (MI) Tel. 022175 - mail: nhmilano2@nh-hotels.com

FINAL PATHOLOGY EXAMINATION

The final histological examination of the prostate and any lymph nodes removed during surgery is usually available in about 20 days. This clarifies the extent and aggressiveness of cancer. In particular, the parameters considered are as follows: 1. Location of the tumor and its relationship with the surgical resection margins; 2. Aggressiveness of the tumor; 3. Volume of the cancer; 4. Cancer spread: tumor within the prostate or outside the prostate; 5. Cancerous involvement of the seminal vesicles or lymph nodes (remember that not all patients require lymph node removal).
The final pathology examination is an essential element to decide whether the patient should undergo additional treatment. Every patient, even in the case of potentially unfavorable prognostic parameters must receive a first PSA titration between 1 and 3 months after surgery. Successively, if the PSA level is down to zero, the patient may only need be periodically observed over time.

COMPLICATIONS RELATED TO RADICAL PROSTATECTOMY

Robotic-assisted radical prostatectomy is associated with complications in a low percentage of case. At our center, with more than 4000 cases performed to date, we have had no deaths during the surgical procedure or in the first postoperative month. Mortality rate is less than 0.03% at 90 days after surgery. This percentage is lower than is the one reported in international literature and is in line with what has been observed using open surgery (0.06%).
The rate of 30-day complications in the last 200 cases was around 20%,

after careful data collection by applying the European Association of Urology (EAU) guidelines. However, it must be emphasized that almost all the complications are mild and resolved conservatively without the need for further surgery. In fact, less than 2% of the cases required a re-operation to treat complications such as bleeding, ureteral injury, intestinal injury, inguinal or abdominal wall hernia or the presence of infected lymphatic collection.
Postoperative complications are prospectively collected at our center and the most frequent observed in the first 90 days after surgery in our case histories are listed below:

- Fever requiring antibiotic treatment (8%)
- Urinary fistula with dehiscence of the bladder-urethral anastomosis with the need to prolong the maintenance of the bladder catheter (7%)
- Lymphocele or prolonged lymphorrhagia, which may possibly require the placement of percutaneous drainage (6%)
- Anemia requiring blood transfusions (3%)
- Acute urine retention with the need to replace the bladder catheter (3%)
- Pelvic/abdominal hematoma that may require surgical treatment (2%)
- Inguinal hernia that may require surgical treatment (1.5%)
- Neuropraxia (alteration of sensitivity in the limbs) or nerve injury that can be a transient condition or, rarely, permanent, with sensory or motor changes (1.3%)
- Lymphedema (accumulation of lymph and swelling in the tissues) on the lower limbs which is often transient or, in rare cases, permanent (1.3%)
- Re-operation vs. embolization for acute bleeding or hematoma (1%)
- Transient or, rarely, permanent chronic pelvic-perineal pain syndrome (1%)
- Incisional hernia that may require surgical treatment (0.7%)
- Sclerosis of the bladder-urethra anastomosis, which may require endoscopic treatment (0.4%)
- Intraoperative vascular injury (0.4%)
- Intestinal injury during trocar placement (0.3%)
- Deep vein thrombosis and/or pulmonary thromboembolism (0.2%)
- Intestinal occlusion/perforation needing surgery (0.1%)
- Rectal injury with possible surgical repair vs. colostomy creation (<0.1%)

Deep vein thrombosis (veins of the lower limbs or the pelvis) may occur during the first postoperative month. This is a complication of any surgery

that takes place in the pelvic space. It typically manifests itself with an enlargement of the lower limbs, which might appear hot and painful. Fever and pain may occur. This complication occurred in less than 0.05% in our case history and it is treated with anticoagulant medical therapy. In our experience, pulmonary embolism is even rarer.

A **stenosis of the urethral-bladder anastomosis** (less than 0.5%) may occur during the first 3 months after surgery. In these cases, it is necessary to perform an endoscopic procedure (without skin incisions) to treat the restricted orifice. Another possible complication is the development of **incisional and inguinal hernias** (less than 1% of cases) which may require surgery.

Other possible consequences of radical prostatectomy can be **lymphedema (1.3%)**, which is a swelling of the limbs due to the accumulation of lymphatic fluids. This is related to the removal of lymph nodes for oncological purposes. Most lymphedemas, however, spontaneously regresses following the growth of collateral lymphatic circles. This occurs after a variable period of time, yet generally within 3 months from surgery. A permanent lymphedema has been observed only in rare cases.

Another rare complication is the appearance of a subacute **pelvic pain syndrome** that can be linked to a microscopic fistula at the level of the vesicoureteral anastomosis. In some cases, it could cause an osteitis (or a pubis osteomyelitis) that is typically treated through conservative care.

SURGICAL MARGINS

Robotic radical prostatectomy is associated with a reduced risk of positive margins for tumor cells on pathological examinations when compared to open surgery. International literature showed that 15-30% of patients treated with a robotic approach have a positive surgical margin. In our cohort of patients, the percentage of positive margins is less than 15% in patients with cancer confined within the prostate gland. In the rarest cases of aggressive cancer, in which the disease goes beyond the prostate capsule, this percentage rises to 30%.
The finding of a positive surgical margin is therefore an event that cannot be excluded even in case of tumors with a good prognosis and must be considered as an intrinsic risk of radical prostatectomy. Indeed, prostate

cancer is frequently located on the periphery of the gland. For this reason, it is possible that in patients with very extensive and aggressive tumors, the dissection plan, followed by the surgeon to remove the prostate, will present a (often millimetric) tumor infiltration. In addition, the anatomical structures responsible for erectile function and urinary continence are close to the prostate surface. In some cases, the attempt to preserve these structures, in order to avoid erectile dysfunction and incontinence, could cause a microscopic positive surgical margin.

The clinical relevance and prognostic implications of a positive margin after radical prostatectomy appear to be limited. Several studies have recently shown that the presence of a positive surgical margin does not increase the risk of developing recurrence. This is especially true when the tumour has limited extension, nonaggressive characteristics and surgery is performed to preserve sexual potency and urinary continence. In these cases, patients are followed-up without undergoing any additional treatment since they are cured by surgery alone in most cases. Conversely, when a positive surgical margin is associated with the presence of a very aggressive and extensive tumour or when the PSA value rises, the administration of additional therapies such as radiation therapy and/or hormone therapy may be immediately indicated in order to reduce the risk of tumor recurrence.

LONG-TERM ONCOLOGICAL RESULTS

Based on the histological examination and the first PSA performed three months after surgery, the patient is kept under observation. In some cases, radiation therapy on the prostatic bed and surrounding areas may be required. Some patients could also require a period of androgen deprivation therapy to increase the effectiveness of radiation therapy.
In most cases, no therapy is needed immediately after surgery and follow-up is based on the evaluation of the levels of PSA. After radical prostatectomy, PSA typically reaches values below 0.01 ng/ml. This is an indication of the complete removal of prostatic tissue. However, the presence of aggressive and non-confined prostate disease can cause PSA values to rise during follow-up.
Biochemical recurrence is defined as two or more consecutive PSA values ≥0.2 ng/ml. More than 80% of the patients treated at our Institution are free from biochemical recurrence after surgery. However, this percentage varies significantly depending on disease characteristics: while 90% of

subjects with low PSA values and a slightly aggressive disease at diagnosis are free from recurrence at 5 years, this percentage drops to 65% in case of patients with high PSA values (> 20 ng/ml), an aggressive (Gleason grade 8-10) or a locally advanced disease (pT3 or higher).
A timely identification of patients with biochemical recurrence is essential in order to allow the early administration of salvage therapies such as radiation therapy or systemic therapies aimed at reducing the risk of progression. These therapies are associated with excellent long-term results. For example, radiation therapy can reset PSA values in about 80% of patients treated when biochemical recurrence is identified immediately.

FUNCTIONAL RESULTS

A recent revision of our case series was presented at the annual conferences of the European Association of Urology and the American Urology Association.
If we consider all men treated by surgery, regardless of the surgeon, the complete recovery rate of urinary continence was observed in about 60%, 80% and 95% of patients at 3, 6 and 12 months after surgery, respectively. These percentages depend significantly on three factors: 1. The surgeon performing surgery itself; 2. The age of the patient and his general physical conditions (presence or absence of urinary disorders before surgery and body weight); 3. The stage of the disease
A complete erectile function recovery in patients with a good sexual function before surgery was observed in about 30%, 50% and 70% of patients at 3, 6 and 12 months after surgery, respectively. These percentages depend significantly on three factors: 1. The surgeon performing surgery itself; 2. The age of the patient; 3. Any risk factors for erectile dysfunction before surgery. In our experience, the recovery rates for urinary continence and penile erection is significantly better in patients who underwent robotic surgery compared to those who underwent open surgery.

After surgery, ejaculation will no longer be present, while orgasm perception is usually maintained. This loss of ejaculation creates a condition of male infertility after surgery. If desired, seminal fluid can be collected and frozen before surgery, to be used if requested, for a subsequent Medically Assisted Procreation program.

Alongside the problems of erection and continence, other disorders of the sexual sphere can sometimes occur. After surgery, in fact, once sexual activity is resumed, patients may encounter the following issues:

- Reduction of sexual desire (30%).
- Lengthening of the stimulation time necessary to obtain an orgasm (40%).
- Impossibility of reaching an orgasm or a decrease in orgasm intensity (30%); this condition is usually transitory and rarely permanent.
- Pain during orgasm, typically localized at the level of the penis, but also in other areas of the external genital district like pubis, pelvis and/or abdomen (7%); this condition is usually transitory and rarely permanent.
- Climacturia, otherwise called urinary incontinence associated with orgasm (the occasional loss of modest quantities of urine – generally drops – during orgasm) (30%). This problem typically disappears in over half of the cases in the months following the surgery.
- Altered, more often decreased, penile sensitivity (25%).
- Retraction of the penis, with a consequent shortening, usually greater than or equal to 1 cm (45%).
- Penile curvature during erection (35%).

These disorders can be solved over the months following the surgery with the resumption of normal sexual activity.

RECOMMENDATIONS UPON DISCHARGE FOLLOWING ROBOTIC RADICAL PROSTATECTOMY

Patients are absolutely prohibited from driving any type of vehicle for at least 7 days after removing the bladder catheter.

Eating

• You can resume your usual diet gradually and progressively.
• In the first month after surgery, it is important to drink at least 1 liter and a half of water per day. Moderate alcohol consumption is acceptable.
• To resume normal intestinal function, it is particularly important to vary the diet by enriching it with fresh and cooked fruit and vegetables (at least twice a day), in order to avoid constipation. It is very useful to drink 1 tablespoon

of extra virgin olive oil during main meals.

As a goal, the patient should try to have a bowel movement once a day, in order to avoid hard stool formation. Hard stool could cause difficulty in defecation and the need for consequent excessive abdominal strain – potentially harmful after prostatic surgery.
It is advisable not to use enemas or pearls during the first month following the surgery due to the fact that, in this period, the rectum walls are very thin and therefore you could cause damage.

Physical activity

After hospital discharge, you can gradually resume your physical activity. You can go walking and go up and down the stairs. Driving the car can generally be resumed 2 weeks after surgery.
Remember, however, to avoid excessive physical efforts, such as lifting heavy objects or performing intense exercise (gymnastics, golf, tennis, running), during the first 3 weeks after surgery. It is also important to avoid bicycle or motorcycle use during the same period.

In fact, it is the time required for adequate scar tissue development in the treated areas. If you undertake strenuous physical activities earlier than necessary, you could damage the delicate suture that connects the bladder to the urethra. This could lead to long-term problems related to continence and could even cause a wound hernia.

For the first 4 weeks, try not to sit on a rigid chair with a straight back for more than an hour. Use comfortable chairs with a more inclined back (for example reclining chairs, sofas, or armchairs with a footrest).

This behavior is useful for 2 reasons:
1. It allows the legs to be elevated, thus promoting the venous blood returning to the heart (decreasing the risk of deep thrombosis, see below);
2. It avoids putting all of a patient's body weight on the perineum area affected by the surgery (between the testicles and the rectum).

General problems

Abdominal pain.

Abdominal pain is frequent but of mild intensity and it is present especially the day after surgery. It is generally due to the air in the bowel and/or the resumption of intestinal peristalsis: it usually disappears quickly with the return to normal intestinal activity and therefore in this phase analgesics are useless, if not counterproductive. Don't worry, because everything will resolve itself spontaneously. However, try to avoid those activities that encourage its onset.

In rare cases, typically in the first 24-48 hours after bladder catheter removal, acute abdominal pain may develop, localized particularly in the lower abdomen, which typically begins at the end of urination. This sudden and severe pain often depends on an incomplete seal of the urethra-bladder anastomosis with consequent leakage of urine that irritates the intestine and produces pain. Always let us know if this happens. The pain typically disappears with the re-placement of the bladder catheter.

Surgical wound.

The stitches on the skin wounds are absorbable and do not usually need to be removed as they dissolve on their own. You can take a shower after the removal of the bladder catheter (bathing in the tub is allowed after about 10 days after surgery).

A tiny fraction of patients can develop a wound infection. This is manifested by the leakage of clear (serum) or blood-mixed pus material from the wound. Do not worry about this. You can be followed by your attending physician or come to our clinics. Always notify us if you experience this kind of problem.

Deep vein thrombosis.

During the first 4-6 weeks after surgery, deep vein thrombosis of a lower limb may occur in about 1% of cases. It can cause pain in the calf, ankle or leg swelling and be associated with a red and hot lower limb.

Sometimes fever may appear. Although very rarely, these thrombi can detach and reach the lung causing a very serious condition called pulmonary embolism. Chest pain (especially after a deep breath), shortness of breath, sudden appearance of weakness and a sense of fainting should warn you.

It is important to immediately recognize these signs and go to the emergency room.
Always notify us if you experience this kind of problem.

Urinary tract infections.

They can happen when a bladder catheter is kept in place for a few days, appearing in various ways (burning after urination, cloudy and foul-smelling urine, fever, chills, etc.). If this happens, we recommend having a complete urine test and urine culture with an antibiogram and ask your doctor for any appropriate antibiotic therapy.
Always notify us if you experience this kind of problem.

Sediment in the urine.

This can happen due to the leakage of old clots that were present in the bladder after surgery. The urine generally remains reddish for at least 15-20 days after bladder catheter removing. Abundant hydration (drinking at least 1.5-2 liters of water per day) will help to make the urine clear. If you have difficulties during urination, please notify us immediately.

Swelling.

The scrotum and penis frequently swell as lymph fluids can be collected at this level. If this happens, lift the scrotum itself towards the abdomen, placing a rolled towel underneath between the legs (as shown during hospitalization). Generally, genital swelling lasts a month and then it spontaneously disappears.
An ice pack can sometimes ease the discomfort resulting from swelling of this area. The feet, legs or thighs might swell. This is due to lymphatic stasis (lymphedema) or blockage of the venous circulation (deep vein thrombosis, see above).
Always notify us if you experience this kind of problem.

Skin Hematoma.

In some cases, skin hematomas are observed, especially in the hips and genitals, due to surgical procedures, or in the subcutaneous injection sites

of the anticoagulant. They disappear on their own in about 1 month.

Removal of the bladder catheter.

The bladder catheter is generally removed 7 to 10 days after surgery. In rare cases, it may be necessary to keep the catheter in place for a longer period of time. As mentioned above, it is important that the patient is discharged from the hospital as soon as possible, so the discharge often occurs with the bladder catheter still in place. In these cases, it is important to keep the catheter open and connected to the urine collection bag as used during hospitalization. Be careful not to traction the catheter. If this happens, it is possible that the urine becomes reddish or blood comes out in the area around the catheter itself. In this case, it is imperative to drink large quantities of liquids and then the situation returns to normal.
The bladder catheter is kept in place using a balloon inflated in the bladder. Very rarely (1 case out of 200 patients) the catheter may accidentally be dislocated due to balloon breaking. In this case, it is important to go to our emergency room as it may be necessary to replace it with a new bladder catheter.

Resumption of urinary continence: Personal Experience

Return to urinary continence after the removal of the bladder catheter occurs gradually and progressively. In my personal experience, at least 50% of patients have complete urinary continence 24 hours after removing the bladder catheter. During the first 3 months after surgery, almost all patients regain complete urinary continence and it is very rare to observe a patient who still needs a protective diaper.
The return to urinary continence typically occurs in 3 stages:
First phase: you will be dry at night when lying in bed.
Second phase: you will be dry during daytime. Typically, urinary continence normalizes faster in the morning and less quickly in the afternoon and evening.
Third phase: you will be dry even during any physical activity.
Since all patients are different, it is not possible to predict exactly when it will be possible to reach total urinary continence in each individual case.

I would always recommend to our patients a physiotherapy evaluation before and after surgery. A physiotherapist can teach exercises that favour the

muscle recovery involved in urinary continence.

After surgery, the visit must be carried out about 30 days after bladder catheter removal.

Until you have reached complete urinary continence, we advise you to wear a diaper and not to drink too much coffee or alcohol.
In my experience, less than 0.3% of patients treated with robotic radical prostatectomy have definitive urinary incontinence requiring the positioning of an artificial urethral sling to solve the problem.

RETURN TO URINARY CONTINENCE

The removal of the prostate gland is followed by subsequent urinary tract reconstruction through the anastomosis between the bladder and the residual urethral segment. The anastomosis guarantees the urine outflow, but it does not allow the same compensation mechanism of the bladder sphincter. In some cases, the resection of the natural sphincter during surgery might result in urine leaks.
The anatomical structures that are usually not involved during surgery (except for patients who underwent radiation therapy) are the pelvic floor muscles which is the muscular lozenge-shaped area that rests on the saddle when riding a bicycle and which supports the bladder and the last portion of the urethra.
Therefore, after surgery, continence is determined only by the external sphincter along with the support of the pelvic floor muscles.
The rehabilitation has as its objective the strengthening and general improvement of these muscles.

Scientific evidence suggests that these exercises can contribute to the prevention and treatment of urinary and sexual problems and can have a positive impact on the patient's quality of life.

It has been shown that pre-operative physiotherapy sessions, started at least twenty days before surgery, might favor a more rapid and gradual recovery of any post-surgical dysfunctions.

A post-operative rehabilitation plan is then designed, using different

techniques according to the patient's symptoms:

- **Behavioral or bladder training**: advices related to lifestyle, and to the amount of fluids consumed daily. These tips are personalized and based on a bladder diary kept by the patient himself for at least two consecutive days.
- **Kinesiotherapy:** allows to strengthen the pelvic floor. A series of exercises to improve the perineal musculature, between the anus and the scrotum. The exercises do not include anus contraction because this muscle is not involved in urinary continence. Depending on the recovery obtained, these exercises can become increasingly demanding, until they are performed with the telemetry biofeedback technique (with an anal manometry probe) during the execution of more demanding physical activity (jumping and running).
- In particular situations, **Functional Electrical Stimulation** is used. Its objective is not only the reinforcement of the pelvic muscles, but also the self-awareness of the perineal floor with subsequent inhibition on the contraction mechanism (responsible for the emptying of the bladder). In addition to the usual technique with ring electrodes, the most recent SANS technique is preferred, which provides for posterior tibial nerve stimulation of the lower limb in case of urge-incontinence symptoms.

Rehabilitation treatment supports the pharmacological treatment in addressing post-operative problems and represents an effective way to improve patient's quality of life in the first months after surgery.

Resumption of sexual function: Personal Experience

The preservation of the nerves involved in the erection mechanism is a fundamental element for a satisfactory return to spontaneous erections. As explained before, the resumption of sexual function depends on age, on pre-operative sexual power and on the extent of the tumor, which is the key parameter in determining the surgical approach.
It must be kept in mind that after surgery, erotic erections stimulated by adequate sexual arousal will resume first! Do not expect to see the "psychogenic" or "nocturnal" erections that every man is normally used to

experience; these can take up to 2 years to reappear.
It is therefore important that the patient "exercises" his sexual activity, which must be considered as a real rehabilitation. The first favorable sign during sexual activity is to see an enlargement of the penis during the maximum excitement, even in absence of rigidity.

Some practical tips to resume your sexual activity quickly and well:

1. Lubrication of the penis and vagina before sexual intercourse is very helpful
2. Kneeling or standing positions during sexual intercourse improve erections.
3. Once an erection is obtained, you can put a normal elastic band at the base of the penis, which facilitates the blood entrapment inside the penis.
4. Do not wait for the "perfect erection" before having sex. Try to have sexual intercourse even if the erection is partial. Sexual activity facilitates recovery!
5. It is important to understand that sex is not penetrative in the first phase since the necessary penile stiffness returns in a few months. In the first period following surgery, sex is therefore mechanical, but equally pleasant! It is important to practice masturbation frequently (at least 3 times a week) because this represents the most effective form of penile rehabilitation.
6. You should know that you will be able to have an orgasm even without an erection. **Remember, however, that the release of seminal fluid will not follow orgasm, as seminal vesicles and prostate have been removed during surgery. A condition of permanent sterility is therefore created.**
7. It is always useful to completely empty the bladder before each sexual act to avoid the phenomenon of urinary incontinence at the time of orgasm.

In my personal experience, for every patient interested in regaining normal erections it is indicated to stimulate the penis pharmacologically, both by using drugs that improve blood circulation inside the penis and by using small microinjections that promote the blood flow to the penis.

The erection recovery program requires that all patients learn to use intra-cavernous microinjections of a vasoactive mixture developed at San Raffaele. Our specialist in this technique, Dr. Luigi Barbieri, instructs patients on the painless self-injection method in two meetings. These microinjections should be carried out 1-2

times a week, regardless of sexual activity, for rehabilitation purposes.

We also believe that it is very useful to take a 5-phosphodiesterase inhibitors drug before sexual intercourse and not in association with intra-cavernous injections.
Patients with chronic NITRATES therapy (medicines useful in some cases of angina - ischemic heart disease) CANNOT take the drugs listed above.

As for future check-ups, we recommend that you carefully follow all that has been written in the discharge letter.

It is a great pleasure for me to have the chance to treat you. I hope you will always consider our entire medical staff as both doctors and friends.
While remaining at your complete disposal for any further clarification, I take this opportunity to offer you my best regards.

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