Recommendations

Standard guidelines for electrosurgery with radiofrequency current

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ABSTRACT

Definition: Radiofrequency (RF) induces thermal destruction of the targeted tissue by an electrical current at a frequency of 0.5 MHz (RF). As the electrode tip is not heated, there is minimal thermal damage to the surrounding tissues, producing good esthetic results. Therefore, RF ablation is also known as cold ablation or "coblation." **Modality:** It has three modes of operation: (a) Cut, (b) cut and coagulate and (c) coagulate. Therefore, it can be used for various purposes like incision, ablation, fulguration, shave excision and coagulation. Because of the coagulation facility, hemostasis can be achieved and operation becomes easier and faster. **Indications:** It is effective in treating various skin conditions like dermatosis papulosa nigra, warts, molluscum contagiosum, colloid milia, acquired junctional, compound and dermal melanocytic nevi, seborrheic keratosis, skin tags, granuloma pyogenicum, verrucous epidermal nevi, xanthelesma, rhinophyma, superficial basal cell carcinoma and telangiectasia. It can also be used for cosmetic indications such as resurfacing, earlobe repair and blepharoplasty. **Anesthesia:** The procedure is accomplished either under topical anesthesia eutactic mixture of local anesthetics or local injectable anesthesia, under all aseptic precautions. **Procedure:** While operating, only the tip of the electrode should come in contact with the tissue. Actual contact of the electrode with the tissue should be very brief in order to prevent excessive damage to the deeper tissues. This can be accomplished by moving the electrode quickly. **Complications:** Complications are uncommon and mainly occur due to an improper technique. The treating physician should be aware of the contraindications of the procedure as listed in these guidelines. **Physician qualification:** RF surgery may be performed by a dermatologist who has acquired adequate training during post-graduation or through recognized fellowships and workshops dedicated to RF surgery. He/she should have adequate knowledge of the equipment and pre- and post-operative care. Blepharoplasty and full-face resurfacing need specialized training at dedicated workshops/centers. **Facility:** The procedure may be performed in a physician's minor procedure room. For advanced procedures and situations like treating certain lesions such as vascular lesions, facial resurfacing and blepharoplasty, a fully equipped minor theater may be preferred.

Key words: Ablation, Electrosurgery, Radiofrequency

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LEVEL OF EVIDENCE
Level A: Strong research-based evidence; multiple relevant, high-quality scientific studies with homogeneous results.
Level B: Moderate research-based evidence; at least one relevant, high-quality study or multiple adequate studies.
Level C: Limited research-based evidence; at least one adequate scientific study.
Level D: No research-based evidence; expert panel evaluation of other information.
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INTRODUCTION

Electrosurgery has been used in medicine since the inception of electricity. It has been used in one or another form to treat human tissues surgically. Electrosurgery is an important and useful tool in the hands of a dermatosurgeon. Early electrosurgery units were no more than sophisticated soldering guns used to burn the tissues. Various machines developed for this purpose have different frequencies of the electric current. The frequency of electric current used in a Hyfrecator is 50 kHz (50,000 cycles/s) whereas in the operating room devices, it is between 500 and 2000 kHz. In these devices, the electrode becomes hot and acts more like true cautery. A radiofrequency (RF) unit converts the standard household current (60 cycles) to this high frequency range (3-4 MHz), similar to the frequency of a marine band radio. Because MHz frequency is used for FM radio transmission, these newer electrosurgery units, which also work in this frequency, are called radiosurgery units.[1-4]

RF surgery works well in the clinical setting as it causes minimal collateral thermal damage, resulting in rapid healing and aesthetically pleasant scars. It is an office-based procedure, performed under local anesthesia, with minimal complications. It has the advantage of having both cut and coagulation modes of operation, making the surgery easy and fast. It is an effective and cheaper tool in the treatment of various skin conditions, which would otherwise need to be handled by expensive ablative lasers.[1-4]

EVIDENCE: LEVEL B

1. Bridenstine JB. Use of ultra - high frequency elctrosurgery (radiosurgery) for cosmetic surgical procedures. Dermatol Surg 1998;24:397-400.
2. Chiarello SE, Radiovaporization RF. Cutting to vaporize and sculpt skin lesions. Dermatol Surg 2003;29:755-8.
3. Pollock SV. Electrosurgery of the skin, New York: Churchill Livingston; 1991.
4. Sachdeva S, Dogra A. Radiofrequency (RF) ablation in dermatology. Indian J Dermatol Venereol Leprol 2007;52(3):134-7.

Rationale and scope

The guidelines seek to lay down minimum standards and guidelines of care for use of RF surgery. Information on the machine, various electrodes, cleaning, sterilization and maintenance of the electrodes, indications for RF surgery, contraindications, pre-operative preparation, anesthesia, various techniques and post-operative complications that can be encountered and their management will be covered in these guidelines.[1-6]

Mechanism of action

The radiowaves created by this device travel from the electrode tip to the patient and are returned to the device via an indifferent plate antenna placed under the patient's body in the vicinity of the surgical site. The antenna may or may not require direct contact with the skin, depending on the manufacturer's instructions. Hence, manufacturers' recommendations should be followed while using the machine. As the current passes through the tissues, impedance to the passage of current though the tissue generates heat, which boils the tissue water creating steam, resulting in either cutting or coagulation of tissue. Three patterns of current flow are produced by the device:

1. Fully rectified, filtered, used mainly for incision (microsmooth cutting) (90% cut and 10% coagulate).
2. Fully rectified, used mainly for the excision of epidermal growths (50% cut and 50% coagulate).
3. Partially rectified, used mainly for hemostasis or coagulating vascular lesions (90% coagulate and 10% cut).[1-6]

As mentioned earlier, there is minimal collateral damage (up to 75 μm) caused by RF machines. Possible reasons for this minimal collateral damage are:

1. The electrodes do not get heated during the procedure.
2. Only the tip of the electrode comes in contact with the tissue, that too for a very short time.
3. The diameter of the electrode is small and therefore the electrode–tissue interface is also small.
4. RF uses a high frequency power, but at low intensity.

EVIDENCE: LEVEL B

1. Boughton RS, Spencer SK. Electrosurgical fundamentals. J Am Acad Dermatol 1987;16:862-7.
2. Sebbon JE. Electrosurgery: High-frequency modalities. J Dermatol Surg Oncol 1988;14:367-71.
3. Hainer BL. Electrosurgery for the skin. Am Fam Physician 2002;66:1259-66.
4. Sebbon JE. Electrosurgery principles: Cutting

current and cutaneous surgery - Part-1. J Dermatol Surg Oncol 1988;14:29 -31.
5. Sebbon JE. Electrosurgery principles: Cutting current and cutaneous Surgery - Part-2. J Dermatol Surg Oncol 1988;14:147-50.
6. Hainer BL. Fundamentals of electrosurgery. J Am Board Fam Pract 1991;4:419-26.

Instrumentation

Different machines with different specifications are available in the Indian market, manufactured in different countries. The description of the specifications of these commercial machines is beyond the scope of these guidelines. The physician should be familiar with the operating manual of the machine and, if necessary, undergo appropriate training from the manufacturer.[1-4]

The special electrodes used in RF devices are made of tungsten and do not melt at the operating temperatures. The electrodes are of various types. These include:

1. Long sharp-tipped electrode used for treating small lesions like colloid milia, dermatosis papulosa nigra, verruca plana, molluscum, etc.
2. Slightly thicker and angled electrode with a sharp tip is used to fulgurate verrucae, epidermal nevi, etc.
3. Wire–loops (tungsten wires of 0.004, 0.007 and 0.009 inch in diameter) are used for cutting skin tags, junctional, compound and dermal melanocytic nevi and resurfacing.

Methods of sterilization

The handpiece and electrodes can be autoclaved (if allowed by the manufacturer) or sterilized using a formalin chamber or ethylene oxide. The electrodes may also be sterilized by keeping in gluteraldehyde solution (Cidex).[1-4]

EVIDENCE: LEVEL C

1. Brown JS. Radiosurgery: A new instrument for minor operations. Practitioner 1995;239:446-8
2. Sebbon JE. Electrodes for high-frequency electrosurgery. J Dermatol Surg Oncol 1989;15:805 -10.
3. Eremia S, Newman N. Use of insulated ultrafine point radiosurgery for transconjunctival blepharoplasty of the lower eyelids. Dermatol Surg 2001;27:1052-4.
4. Sachdeva S, Dogra A. RF ablation in dermatology. Indian J Dermatol Venereol Leprol 2007;52:134-7.

Physician qualification

A qualified dermatologist can undertake RF surgery after receiving adequate training in this field during post-graduation or after post-graduation through recognized fellowships and hands-on workshops. The physician may practice the procedure on a fruit or flesh to gain a good control over the hand before experimenting on a live patient.[1,2]

Facility

When treating small and few lesions, RF surgery can be accomplished in a procedure room with adequate lighting. For treating vascular lesions or extensive lesions on the face, ideally, a fully equipped minor operation theatre should be used. Adequate light and magnification (if desired) are needed and an exhaust fan (for smoke evacuation) or, ideally, a smoke evacuator need to be in place.[1,2]

Patient selection

Detailed history with reference to previous RF procedures (if any), keloidal tendencies, history of herpes infections and patients' own expectations in cases of cosmetic indications need to be taken into account. Proper counseling of the patient with respect to the procedure, results aimed to be achieved, post-operative course and possible complications need to be done.[1,2]

RF is contraindicated in a person with a pacemaker and keloidal tendency. Aspirin may be stopped at least 3 days before the date of surgery when extensive RF procedures are being planned. In lesions on the face, priming with Retinoic acid 0.025% or Hydroquinone 2% may be carried out in a person with a tendency for post-inflammatory pigmentation. Prophylactic Acyclovir or Valacyclovir may be administered in cases with a recent history of Herpes labialis (started on a day before to surgery, to be continued for 1 week), particularly if the procedure is to be performed on the face. Informed consent should be taken in all cases and a detailed form (see appendix 1) should be recorded.[1,2]

Evidence

1. Sachdeva S, Dogra A. RF ablation in dermatology. Indian J Dermatol Venereol Leprol 2007;52:134-7.
2. Yu SS, Tope WD, Grekin RC. Cardiac devices and electromagnetic interference revisited: new RF technologies and implications for dermatologic surgery. Dermatol Surg 2005;31:932-40.

Indications

It is effective in treating various skin conditions, as explained below:[1-11]

1. Infections: Verrucae, molluscum contagiosum.
2. Metabolic: Xanthelasma, xanthomas.
3. Benign skin conditions: Freckles, dermatosis papulosa nigra (DPN), acne, skin tags, cherry angiomas, spider angiomas, naevi, trichoepithelioma, syringomas, apocrine hidrocystomas, stucco keratosis, papilloma, neurofibromas, cutaneous horn, keratoacanthoma, rhinophyma, sebaceous hyperplasia, granuloma pyogenicum.
4. Senile skin conditions: Actinic keratosis, sebborheic keratosis and senile lentigines.
5. Nail procedures: Nail matrixectomies, surgical hemostasis of ingrown toenail and onychogryphosis.
6. Cosmetic indications: Mole removal, telangiectasia, unwanted hair removal, scar revision and resurfacing, earlobe repair, development of flaps, oculoplastic procedures and blepharoplasty.[1-11]

Table 1 gives the details of indications and instrument settings for these indications.[1-11]

EVIDENCE: LEVEL B

1. Bosniak S, Cantisano-Zilkha M. Radiosurgery: A 25 year history of scarless mole removal. Oper Tech Oculop Orbital Reconstr Surg 2001;4:109-12.
2. Valinsky MS, Hettinger DF, Gennett PM. Treatment of verrucae via radio wave surgery. J Am Podiatr Med Assoc 1990;80:482-8.
3. Yu TC, Rahman Z, Ross BS. Actinic keratosis-surgical and physical therapeutic modalities. Cutis 2003;71:381-4.
4. Gupta S, Handa U, Handa S, Mohan H. The efficacy of electrosurgery and excision in treating patients with multiple apocrine hidrocystomas. Dermatol Surg 2001;27:382-4
5. Bridenstine JB. Use of ultra high frequency electosurgery (Radiosurgery) for cosmetic surgical procedures. Dermatol Surg 1998;24:397-400.
6. Clark DP, Hanke CW. Electrosurgical treatment of rhinophyma. J Am Acad Dermatol 1990;22:831-7
7. Rex J, Ribera M, Bielsa I, Paradelo C, Ferrandiz C. Surgical management of rhinophyma: Report of eight patients treated with electrosection. Dermatol Surg 2002;28:347-9.
8. Chiarello SE. Radiovaporization RF cutting to vaporize and sculpt skin lesions. Dermatol Surg 2003;29:755-8.
9. Eremia S, Newman N. Use of insulated ultrafine point radiosurgery for transconjunctival blepharoplasty of the lower eyelids. Dermatol Surg 2001;27:1052-4.
10. Sheridan AT, Dawber RP. Curettage, electrosurgery

Table 1: Indications, anesthesia, power settings and type of electrode while performing radiofrequency surgery

Lesion	Anesthesia	Mode and power setting	Electrode
Colloid milia	EMLA and icepack	Cut + coagulate in fulguration	Straight, narrow, sharp tipped
Verrucae plana		Between 1.5 and 2.5	OR Angled with a sharp tip
Molluscum			
DPN			
Verrucae	Xylocaine 2%	Between 2.5 and 3.0	Angled with a sharp tip
Epidermal nevi		Coagulation of the base for hemostasis	Small ball tip
Skin tags	Xylocaine 2%	Cut + coagulate 3.0.to 3.5	Wire loop Straight, narrow, sharp tipped
Mole		Coagulation of the base for hemostasis	Small ball tip
Seborrheic keratosis			
Granuloma pyogenicum	Xylocaine 2%	coagulate 3.0.to 3.5	Small ball tip
		Coagulation of the base	
Rhinophyma/resurfacing	Xylocaine 2% and icepack	Cut + coagulate	Wire loop or blade
		Between 2.5 and 3.0	
Xanthelasma	Xylocaine 2%	Cut + coagulate	Straight, narrow, sharp tipped
		Between 1.5 and 2.0	
		Coagulation of the base	
Epilation	EMLA	Coagulate	Epilation microneedle
		Between 2.5 and 3.0	
Earlobe repair	Xylocaine 2%	Cut + coagulate	Straight, narrow, sharp tipped
Blepharoplasty	Xylocaine 2%	Cut Between 2.0 and 2.5	Straight, narrow, sharp tipped

and skin cancer. Australas J Dermatol 2000;41:19-30.
11. Harris DR. Using a low current radiosurgical unit to obliterate facial telangiectasia. J Dermatol Surg Oncol 1991;17:382-4.

Histopathology of lesions excised by RF surgery (Level D)

It is often thought that the heat-coagulation artifact caused by RF surgery is not extensive enough to interfere with the pathologist's evaluation of the submitted specimen and hence many dermatologists perform RF surgery even when histopathological examination (HPE) is planned. It should be remembered that even minor artifacts may interfere with HPE and hence it is recommended that RF is not carried out for all excisions planned for HPE. If any lesion is excised by RF and later HPE is felt necessary, it is advisable to mention this fact specifically in the requisition form.

Combination of RF with other treatment modalities

RF may be combined with other modalities such as cryosurgery.[1]

Contraindications: There are very few contra-indications for performing the technique. These include patients with keloidal tendency and people with pacemakers. Patients with a recent active episode of herpes simplex infections should be treated cautiously and after administering prophylactic acyclovir.[1]

Evidence

1. Sebben JE. Electrosurgery and cardiac pacemakers. J Am Acad Dermatol 1983;9:457-63.

Anesthesia

Most superficial lesions need only a eutactic mixture of local anesthetics/injection Xylocaine 2% with or without adrenaline. Full-face resurfacing/ blepharoplasty may need intravenous sedation.[1-3]

Procedure

A basic outline of the procedure only is described here and individual variations exist between different operators. After achieving local anesthesia, as described above, the lesional skin is prepared with povidone iodine and normal saline. Using spirit, even in the vicinity, should be avoided strictly as it is highly inflammable. The desired electrode is fixed to the handpiece. Preferably, an electrode with a smaller diameter and a narrow tip is to be used. The electrode in placed on a saline-soaked gauze and the RF device is activated for a short duration by pressing the foot switch intermittently. If the foot switch is activated continuously, the machine will burn out. After each use, the tip of the electrode is wiped on the rough surface of the saline-soaked gauze until all debris and dirt is totally removed. This does not guarantee sterilization, but cleans the electrode and helps in achieving only partial disinfection.[1-3]

For fulguration, the machine is put on a minimum power setting. For ablation, a medium power setting is used. Beginners may confirm the setting by trying on a soap cake or on wet gauze. It is advisable to wet the tissue with saline before passing radiowaves. This reduces the tissue resistance and the procedure can be performed with a lower power of RF. The handpiece is held in a pen-like fashion and the tip of the electrode is swiftly but very quickly moved over the tissue to be fulgurated/ablated or excised. The contact time of the tip of the electrode with the tissue should be very brief. Longer contacts may lead to unnecessary cutting and scar formation.[1-3]

EVIDENCE:LEVEL C

1. Chiarello SE. Radiovaporization: Radiofrequency cutting current to vaporize and sculpt skin lesions. Dermatol Surg 2003;29:755-8.
2. Sachdeva S, Dogra A. Radiofrequency ablation in dermatology. Indian J Dermatol Venereol Leprol 2007;52:134-7.
3. Bridenstine JB. Use of ultra - high frequency elctrosurgery (radiosurgery) for cosmetic surgical procedures. Dermatol Surg 1998;24:397–400.

Factors affecting the efficacy of RF

The following factors affect the efficacy:[1-7]

1. Intensity of the power setting: The cutting of the tissue should be brisk and with the smallest electrode and lowest power setting required to minimize the tissue damage and bleeding. Most skin lesions need a power setting between 10 and 20 W. In general, coagulation requires higher power settings than cutting, which requires higher power settings than desiccation or fulguration.
2. Surface area of the electrode and contact time: An electrode of a small size causes less lateral heat spread and requires a lower power setting. The cutting current procedures are best accomplished with a fine needle or wire electrodes.
3. The type of current selected: The selection of the waveform depends on whether cutting or coagulation is the primary aim.
4. Presence of moisture: Moisture on the surface of

the tissue prevents charring. Therefore, the surface should be moistened with a saline-soaked gauze.
5. Waiting period: A waiting period of 10 s is ideal between two passages of electrode used for cutting in the same surgical field. It allows adequate cooling and prevents cumulative heat damage.[1-7]

EVIDENCE:LEVEL C

1. Sebbon JE. Electrosurgery: High-frequency modalities. J Dermatol Surg Oncol 1988;14:367-71.
2. Hainer BL. Electrosurgery for the skin. Am Fam Physician 2002;66:1259-66.
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6. Savant SS. Radiosurgery. *In*: Savant SS, Gore D, Atal-Shah R, Sarangi K, editors. Textbook and atlas of dermatosurgery and cosmetology. 2nd ed. Mumbai, India: ASCAD; 2005. p. 305-14.
7. Sachdeva S, Dogra A. Radiofrequency ablation in dermatology. Indian J Dermatol Venereol Leprol 2007;52:134-7.

Practical tips and special instructions while operating the RF machine

The operator should remember to use the foot switch intermittently and not to keep it pressed continuously or else the RF generator will burn off.[1-4] If the electrode sticks to the tissue while operating, it indicates that the power is insufficient. Power setting should be gradually increased by increments of 0.5 unit until the electrode no longer sticks. On the other hand, if sparking or charring is seen, it indicates that the power is high. Reduce the power setting appropriately till no sparking or charring is seen. Special care should be taken and caution should be observed while operating on the delicate areas like eyelids, ear, nose and external genitals. Other useful tips include:

1. Pedunculated lesions should be clamped between two haemostats, cut with a wire loop and base coagulated with a small ball tip electrode.
2. Small skin tags can be gripped with a toothed forceps and excised from the base with a wire loop electrode.
3. Mole or seborrheic keratosis can be shave-excised in a zip (brief and fast movement) by an experienced surgeon, with a wire loop. A beginner should be careful while excising wider and flatter lesions.
4. A dermatologist should not attempt blepharoplasty unless adequately trained in this technique.
5. RF should not be performed in the presence of oxygen as there is a risk of explosion. It should be made sure that the patient is in contact with the ground plate during the procedure.
6. The operator should consider wearing a surgical mask and eye protection when working on lesions containing human papilloma virus.
7. Spirit swabs should not be used as spirit is inflammable.[1-4]

EVIDENCE: LEVEL C

1. Yu SS, Tope WD, Grekin RC. Cardiac devices and electromagnetic interference revisited: new radiofrequency technologies and implications for dermatologic surgery. Dermatol Surg 2005;31:932-40.
2. Sebben JE. The hazards of electrosurgery. J Am Acad Dermatol 1987;16:869-72.
3. Savant SS. Radiosurgery. *In*: Savant SS, Gore D, Atal-Shah R, Sarangi K, editors. Textbook and atlas of dermatosurgery and cosmetology. 2nd ed. Mumbai, India: ASCAD; 2005. p. 305-14
4. Sachdeva S, Dogra A. Radiofrequency ablation in dermatology. Indian J Dermatol Venereol Leprol 2007;52:134-7.

Post-operative care

1. Cleaning with normal saline: Just dabbing is advisable as rubbing may lead to persistent erythema.
2. Topical antibiotic: Sodium Fusidate ointment/ chloramphenicol ophthalmic ointment (which can be used safely around the eyes)/mupirocin ointment.
3. Dressing with sterile gauze and hypoallergic sticking tape, to be removed after 48 hours, as necessary.
4. Application of topical antibiotic for a week.
5. Systemic antibiotics for 5 days, if multiple lesions are treated and infection is anticipated.
6. Sunscreen, if exposed areas are treated.

Complications

Complications during RF are few and may include:[1-2]

1. Intra-operative: Laceration, deep wound, hemorrhage. Incidence of such complications can be minimized with adequate training and experience. Pressure for a sufficient duration and coagulation with ball electrodes helps in achieving hemostasis.
2. Sepsis can be avoided by observing scrupulous aseptic precautions.
3. Scarring can be avoided using proper electrodes,

proper power settings and, most important, by mastering the technique of very brief contact of the electrode with the tissue.
4. Pigmentary changes, particularly hyperpigmentation, is common in the Indian skin. It can be avoided by priming with hydroquinone and regular use of sunscreens.
5. The bacterial transference of *Staphylococcus aureus* through the electrode from one patient to another is possible.[1-2]

EVIDENCE: LEVEL C

1. Bennett RG, Kraffert CA. Bacterial transference during electrodesiccation and electrocoagulation. Arch Dermatol 1990;126:751-5
2. Sebben JE. The hazards of electrosurgery. J Am Acad Dermatol 1987;16:869-72.

NON-ABLATIVE RF

Several new non-ablative RF devices, both monopolar and bipolar systems, have been recently introduced.[1-3] These systems, also called skin tightening machines, induce skin tightening over the face, neck, abdomen, etc. and are used in rejuvenation. These systems heat up the lower dermis without ablating the epidermis (and hence the term non-abaltive), thereby inducing collagen remodeling and the skin tightening effect. The experience and data with these systems are limited and hence need further evaluation before specific guidelines can be established for their use.

Evidence

1. Abraham MT, Chiang SK, Keller GS, Rawnsley JD, Blackwell KE, Elashoff DA. Clinical evaluation of non-ablative RF facial rejuvenation. J Cosmet Laser Ther 2004;6:136-44.
2. Narins DJ, Narins RS. Non-surgical RF facelift. J Drugs Dermatol 2003;2:495-500
3. Finzi E, Spangler A. Multipass vector (mpave) technique with nonablative RF to treat facial and neck laxity. Dermatol Surg 2005;31:916-22

CONCLUSION

RF surgery is a better tool as compared with electrocautery and has distinct advantages like less bleeding, cutting as well as coagulation ability, minimal tissue trauma, faster healing and good esthetic results. Hands-on training is highly recommended before undertaking this procedure.

CONSENT FORM FOR RADIOFREQUENCY SURGERY

I _____Age _____Sex_____, here by authorize Dr._____ to operate on myself or on _____, who is my_____ (relation), with radiofrequency surgery for the treatment of _____ _____, Dr _____ has explained the procedure(s), technique and I understand the same. I consent to the administration of any anesthesia considered necessary or indicated in the judgment of the surgeon and/or anesthetist. My Physician/Surgeon/Anesthetist has/have adequately explained to me about the alternative available treatments for this condition, possible outcome, risk involved and possible consequences associated with this procedure/surgery, and also about the prognosis if this procedure/surgery is not done. I have understood that fully.

It has been also explained to me by Dr_____ that during the course of the procedure/surgery, unforeseen condition may be revealed, that may necessitate intervention or an extension of the procedure(s). I therefore, authorize my surgeon, his/her assistants, anesthetist, or his/her designees to perform such procedure(s) if the need arises. I authorize the examination by an authorized pathologist, of the tissue excised during the surgery and/ or disposal of such tissue in accordance with the clinic/hospital policies. I also give full consent to take pre and post operative clinical photographs/video shooting before, during and after the procedure, for the purpose of continuing medical education, publication and presentation in medical conferences. I understand that, this will remain confidential. All my questions have been fully answered to my fullest satisfaction.

I certify that I have read and fully understood the above consent. All the blanks or statements requiring insertion or completion were duly filled in before I signed.

Signature of patient/ Guardian Signature of Doctor

Name and Address:

Tel number:

Signature and Name of Witness