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Integrated Activities in Primary Care – Minor Surgery in Family Medicine

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Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/62650>

Abstract

Minor surgery is defined as the overall surgical procedures of short duration that are generally applied on surface structures. They usually require the application of local anaesthesia and involve performing low and minimal complication risk.

In Primary Care, often some problems need surgery techniques for diagnosis or treatment. Therefore, minor surgery must be within the field of knowledge and skills of a good family physician as a cost-effective tool more for a quality professional practice, attention both scheduled (excision of skin lesions), as in the emergency (suturing wounds).

The limiting factor for excellence in minor surgery is the technical training that makes Family Doctor. Moreover, the minor surgery is not without risks, both during the procedure and after. Therefore, it is imperative in addition to proper surgical technique and suitable directions, to offer a clear and complete information to patients, which will be reflected in the informed consent form. In addition, it is advisable to have a medical insurance with specific coverage for these techniques.

In this chapter, we intend to give scientific answers as to how?, with what ? and where? to perform minor surgery in the field of quality of primary care.

Keywords: Minor surgery, surgical procedures, fusiform excision, suturing techniques, primary care

1. Introduction

Minor surgery (MS) is defined as the group of surgical techniques of a short duration that are generally applied to superficial structures. They tend to require the application of local anaesthesia and involve little risk and a minimum degree of complications [1].

During Primary Care consultations, one frequently comes across health problems that require these procedures for treatment and diagnosis. For this reason, MS falls within the fields of knowledge and competences [2] of a Family Physician (FP), being an additional cost-effective tool [3–5] for quality professional practices [6], both during programmed clinical treatments (excision of skin disorders) and in case of emergency (stitching of injuries).

The fundamental component for excellent MS is the technical capability of the FP carrying it out [1, 4, 7]. On the other hand, MS is not exempt from risk, either while it is being carried out or afterwards. It is therefore essential that, in addition to carrying out correct technical surgical procedures [8, 9] as appropriately indicated [10, 11], we also offer the patient a clear and complete information, which will be set out in the informed consent form. Furthermore, it is highly recommended that there should be some form of insurance available with specific cover for such techniques [12].

In this section, our aim is to provide scientific responses as to where? with what? and how? quality MS should be carried out by the FP.

2. Recommended infrastructure for a minor surgery room

In order to carry out MS, there are some basic requirements with regard to infrastructure and furnishings [1, 13].

2.1. The room

The recommended size is in the order of 15–20 m², with adequate temperature, well ventilated and a good source of artificial light. The ideal situation is to have a room set aside exclusively for MS procedures (Figure 1), although it is sufficient to have a well-prepared treatment room. It is very recommendable that the room should have a wash basin with a single-action tap control and an automatic soap dispenser for washing hands.



Figure 1. Well equipped minor surgery room

2.2. Stretcher

This should be located in the centre of the room so that it can be accessed from all sides. It is recommended that it should be height-adjustable so that the operator can work comfortably, whether seated or standing. Clinical examination benches are not acceptable.

2.3. Auxiliary table

An auxiliary table is for setting out the materials and instruments used during the surgical procedure. It should have wheels and be height-adjustable and should be placed close to the area of the surgical procedure in order to facilitate the treatment. We should avoid placing any surgical materials on top of the patient.

2.4. Stool for the doctor

There should be a stool available for the doctor's use, which should have wheels and be height-adjustable so that the MS can be carried out comfortably.

2.5. Lamp

This should provide the appropriate amount of light, having an illumination level of at least 45,000 lux. It can be portable with wheels or be attached to a wall or to the ceiling. These lamps can be moved in various directions. The intensity of the luminosity can be modified, and the focal point of the light can be concentrated. It is recommended that there should also be an auxiliary lamp with a magnifying glass, which is useful for extracting foreign bodies or for working with magnification.

2.6. Resuscitation equipment

Although risks to life are minimal during MS, it is essential that there should be a carriage available with cardiopulmonary resuscitation equipment on it, carrying the materials for vascular access, intubation of the air passages, serums, resuscitation medication and a defibrillator.

2.7. Sterilisation system

The centre in which MS procedures are carried out should have an autoclave for sterilising surgical materials and equipment, or an external circuit should be set up so that the material can be sterilised.

2.8. Glass cabinet and containers

These are useful for the storage of perishable materials and surgical instruments. Likewise, there should be containers available for biocontaminated materials and an elimination system that conforms to the sanitary legislation in force at the time.

3. The FP's preparation for minor surgery

In the area of primary care, where teamwork is a key to the realization of all clinical activities, the work of the nurse is also a key for successful accomplishment of minor surgery techniques. In many cases, it is the perfect surgical assistant for preoperative, operative and postoperative and in other cases as lead actor of surgery, suturing wounds or performing cryosurgery techniques. In either case, the good cooperation between doctor and nurse entails highly efficient outcomes for the patients.

Furthermore, carrying out MS involves the risk of transmission of infectious and contagious diseases. Universal precautionary steps should be taken in order to minimise this risk. Among these steps are the use of appropriate clothing and accessories and the correct washing of hands and the sterile donning of surgical gloves [1, 14].

3.1. Clothing

During MS procedures, we consider the wearing of an overall to be essential (disposable overalls are very useful) or at least sterile pyjamas and gloves; highly recommended are the use of a surgical mask and of protective glasses or goggles.

3.2. Washing of hands

There are different methods; thus, we have *hygienic washing*, lasting a minimum of 20 seconds, which is carried out using a soapy or antiseptic hand-washing solution (no brush) correctly rubbing all of the folds of the hands. This method of washing is appropriate for MS, whereas anatomic washing (which lasts longer and is more laborious) is more appropriate for major surgery. It is important that no more than 10 minutes should elapse between the washing of the hands and the donning of sterile gloves.

3.3. Donning of gloves

Surgical gloves are sterile, single use and are available in several sizes (numbered [from 6½ to 8½] or alpha-numeric [XS, S, M, L and XL]. There are models with or without latex and with or without a dusted coating.

Surgical gloves are put on in such a way as to avoid them becoming contaminated. The dusted or internal part of the glove can be touched with the hands, whereas the external or non-dusted part should only be touched with the other glove.

4. Necessary materials

4.1. Instruments for minor surgery

The FP should have in-depth knowledge of the surgical instruments and their use. The quality and the type of instrument (and its state of conservation) can affect the result of the surgical

technique; that is, why it is important to correctly select the appropriate instrument for each intervention [1, 13]. The most significant characteristics of the instruments recommended for minor surgery are described below.

4.1.1. Scalpel

This enables sharp cuts to be made to the skin and other tissues and precise dissections of tissue to be carried out. It should have a number 3 handle and number 15 and 11 blades. The scalpel blade should be attached to the handle in a single position, making the guide of the blade coincides with that of the handle.

It is handled with the dominant hand, even though it was a pencil (Figure 2), enabling small and precise incisions to be made. The hand should be partially supported by the work surface in order to ensure the precision of the cut. The opposing hand should be used to stretch the skin in a direction that is perpendicular to that of the incision. The scalpel should make a cut that is perpendicular to the skin (not bevelled), except in hairy areas (the scalp or eyebrows) where it should be inclined so that it is parallel to the direction in which the hair comes out, so as not to affect the follicles.

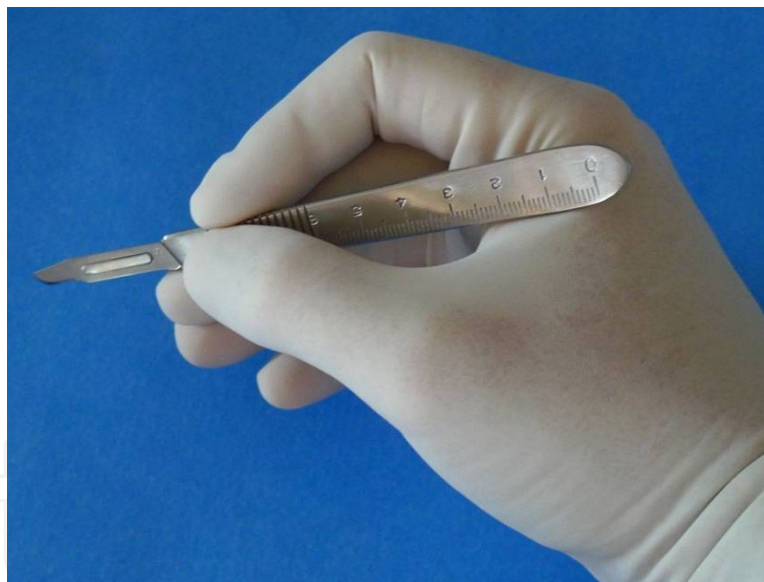


Figure 2. The knife is held with the dominant hand, as if it were a pencil

4.1.2. Needle holder

The needle holders, or “holders”, are designed to safely hold the curved needles without damaging them (the points or grips are appropriate for holding the needles). The needle is held somewhere between the middle and the back third of said needle. It is recommended that there should be standard small- or medium-sized holders (12–15 cm.) with tips capable of handling needles of up to 4/0.

Like other instruments with finger rings, the needle holder is handled by partially introducing the distal phalanges of the thumb and the index finger of the dominant hand, with the index finger pointing towards the tip (Figure 3). When carrying out a stitch, the holder should describe a pronation–supination movement to facilitate the passage of the needle through the tissue. The angle of entry of the needle through the skin should be 90° while the non-dominant hand holds the skin with dissecting forceps, in opposition to the pressure of the needle.

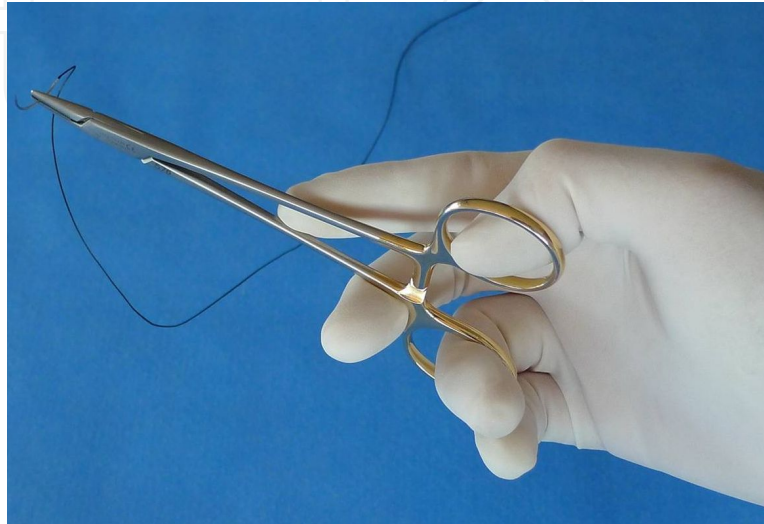


Figure 3. The needle- holders is managed partly by introducing the distal phalanges of the thumb and fourth finger of the dominant hand on the rings, while the index is directed towards the tip.

4.1.3. *Dissecting forceps*

There should be some toothed Adson forceps, 12 cm in length, for handling the skin, and some untoothed Adson forceps for the removal of stitches. Otherwise, standard small forceps should be used. It is important not to handle the skin with untoothed forceps.

Dissecting forceps are the most important of the auxiliary instruments used with the non-dominant hand; they enable the tissues that are handled, dissected or stitched to be exposed while the other hand uses the main instrument. The forceps are held like a pencil between the first, second and third fingers.

4.1.4. *Scissors*

These enable the cutting of both cloth and materials (sutures, bandages and dressings), as well as the dissection of tissues. There should be curved Mayo (cutting) scissors with blunt tips, 14 cm in length, and curved Metzembaum (dissecting) scissors with blunt tips, 11.5 cm in length. The dissecting scissors are not recommended for cutting materials. They are handled by introducing part of the distal phalanges of the thumb and fourth finger into the finger rings, supporting the second finger on the arms of the instrument.

For blunt dissection, the Metzembaum scissors are introduced with the tips closed, and these are then opened separating the tissues through more or less anatomical layers. For cutting

dissections, the scissors are introduced with the tips open, and these are then closed cutting the tissue.

4.1.5. *Haemostatic forceps*

There should be two or three sets of curved 12-cm untoothed mosquito forceps. These should be used for creating traction in tissues for haemostasis and in some cases for carrying out blunt dissection when we have no scissors available.

4.1.6. *Surgical retractors*

These enable the surgical field to be exposed by separating or retracting the edges of the injury. If the surgery is being carried out with the help of an assistant, it will be he or she who uses the retractors; otherwise, it will be the surgeon who uses them with the non-dominant hand. In MS, it is recommendable to have a Senn-Mueller retractor (with a scoop on one end and curved tynes on the other). Another useful retractor in MS is a hook or distractor.

4.1.7. *Additional expendable materials*

Additional expendable materials are single-use gauze dressings, sterile dressings and bandages, antiseptics (iodised povidone [polyvinylpyrrolidone]), needles, syringes, local anaesthetics with and without vasoconstrictors (see local anaesthetic guide) and formaldehyde for transfers to anatomic pathology.

To perform the majority of MS techniques, only a **basic instrument set** is needed (Figure 4). However, certain Primary Care surgical procedures require special instrumentation or equipment, such as curettes, punches, electrical scalpels, cryosurgery materials and surgical retractors.



Figure 4. Starter Kit minor surgery. From left to right, curved mosquito forceps without teeth, needle holders medium Asson dissecting forceps, scissors Mayo, Scalpel Handle number 3

4.1.8. Currettes

Instruments consisting of a handle with an end in the shape of a small spoon or cutting ring enable the scraping of injuries on the surface of the skin. They can be disposable or not and have different diameters. The curette is handled with the dominant hand in accordance with the surgical technique known as “scraping” or enucleating benign superficial skin lesions (protruding or hyperkerastotic) that do not require histological confirmation [15].

4.1.9. Biopsy punches

Instruments consisting of a handle with an end in the shape of a cutting cylinder (drill bit) enable tissue biopsies to be extracted. They tend to be disposable and can have different diameters (from 2 to 28 mm.) and enable samples to be taken of the full thickness of the useful skin for histological analysis. They are used with the dominant hand carrying out rotating movements of the instrument in order to cut the skin and obtain the sample [16].

4.1.10. Cryosurgical equipment

These devices apply a cryogen, generally liquid nitrogen, by means of pulverization or swabs to treat skin lesions [17]. The cryogen is stored in tanks or containers in order to avoid its evaporation. There are portable units available which have a mechanism for pulverising the nitrogen over the lesion to be treated; they are equipped with a range of outlets and probes, which enable the intensity of the pulverisation to be modified, thus varying the amount applied depending on the size and location of the lesion to be treated.

4.1.11. Electrical scalpel

Electrical apparatus consists of a central unit that applies an electrical current through a sterile terminal, with the capacity to coagulate and cut; it also consists of an earth to close the electrical circuit [18]. There are different terminals available depending on the type of procedure to be carried out.

4.2. Care of instruments

With appropriate care, surgical instruments last a long time. The majority of the damage that they suffer is due to incorrect cleaning and handling. On the other hand, MS instruments should always be used in a sterile state. The steps taken care of these details are as follows:

1. Separate sharp or pointed single-use objects (using gloves) and dispose of them in the biocontaminated materials container.
2. The instruments should be placed in disinfecting solutions (a glutaraldehyde or clorhexidine solution at 0.05%, etc.) or a soapy solution.
3. Sterilising. The most appropriate and recommended method is to use an autoclave to control the quality of the sterilisation process.
4. Packaging and labelling.

4.3. Suturing materials

There are different types of materials available: threads, staples, adhesive sutures and tissue adhesives. The use of a certain type of suturing material or type of needle can determine differences in the surgical result, so the choice should be based on scientific criteria and be backed up by good practice.

Thread sutures provide a sure close and ensure the greatest support for the wound and the minimum level of dehiscence compared to other types of closure [19, 20]; however, they require anaesthesia, the intervention takes longer, they traumatise the tissue, introduce foreign bodies into the wound and increase the risk of accidental inoculation.

The alternatives to conventional sutures are mechanical sutures and adhesive tapes, which provide less reactivity and a lower degree of incidence of infections [21]. Glues and tissue adhesives have appeared as an option to common procedures [22–25].

4.3.1. Suture threads

These are classified in accordance with: their origin (natural or synthetic), their configuration (multifilament or monofilament), their calibre (the thickness of the thread is measured in zeros [USP system] with the fewer zeros meaning lower calibre and the most commonly used in minor surgery ranging from 3/0 to 4/0 or 5/0, the finer calibres with smaller needles requiring more precise needle holders) (Figure 5).

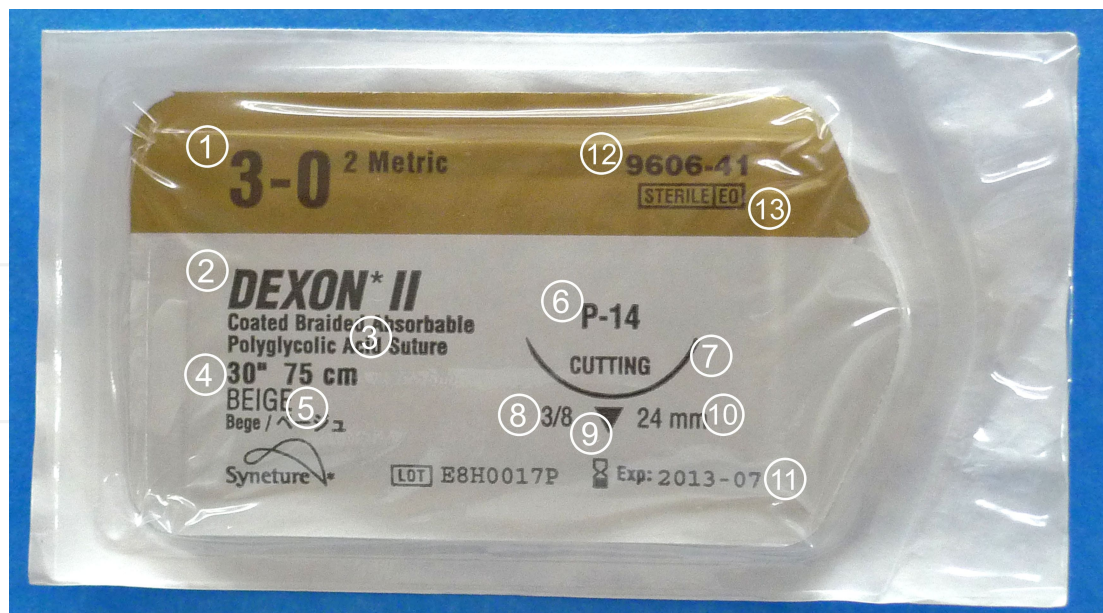


Figure 5. Information of on of suture: (1) calibre of the thread (system USP and metric), (2) trade name of the suture, (3) composition and physical structure of the thread, (4) length of the thread, (5) color of the thread, (6) model of needle (every manufacturer uses different references), (7) I draw from the needle to scale 1:1, (8) circumference of the needle (expressed in parts of circle), (9) section of the needle, (10) length of the needle, (11) expiry date, (12) indexes of the manufacturer, (13) indicator of sterile packing.

We will use a certain type and thickness of suture thread depending on the anatomical area and the characteristics of the wound and the patient (Table 1).

Anatomical region	Skin suturing	Subcutaneous suturing (whenever necessary)	Stitch removal	
			Adults	children
Scalp	staples 2/0 silk	Vicryl® or Dexon® 3/0	7–9	6–8
Eyelids	6/0 monofilament 6/0 silk	-	3–5	3–5
Ears	4/0-5/0 monofilament 4/0-5/0 silk	-	4–5	3–5
Nose	4/0 monofilament 4/0 silk	Vicryl® or Dexon® 4/0	4–6	3–5
Lips	4/0 monofilament 4/0 silk	Vicryl® or Dexon® 4/0	4–6	4–5
Forehead and face	4/0–5/0 monofilament	Vicryl® or Dexon® 4/0	4–6	3–5
Neck	4/0–5/0 silk			
Trunk / abdomen	3/0–4/0 monofilament	Vicryl® or Dexon® 3/0	7–12	7–9
Back	3/0–4/0 monofilament	Vicryl® or Dexon® 3/0	12–14	14
Upper limb / hand	4/0 monofilament	Vicryl® or Dexon® 3/0	8–10	7–9
Pulp of fingers	4/0 monofilament	-	10–12	8–10
Lower extremity	3/0 monofilamentstaples	Vicryl® or Dexon® 3/0	8–12	7–10
Foot	4/0 monofilament	Vicryl® or Dexon® 3/0	10–12	8–10
Penis	4/0 monofilament	Vicryl® or Dexon® 3/0	7–10	6–8
Mouth and tongue	3/0 Vicryl®	-	-	-

Table 1. Indications of types of sutures and time for stitch removal

4.3.1.1. Characteristics of the suture threads

Non-absorbable sutures

These are used for skin sutures that will be removed or for internal structures that need to maintain constant pressure (tendons and ligaments).

1. Silk: Indicated for skin suturing and generally extractable, however, they do cause significant tissue reaction.
2. Nylon: Indicated for precise skin suturing, internal structures that need to maintain constant pressure (tendons and nerves). They are more difficult to handle but produce minimum tissue reaction.

3. Polypropylene: Indicated for continuous intradermal skin sutures. They are very smooth sutures with a long memory, so they require more knotting so that they do not come undone. They cause minimum tissue reaction.

Absorbable sutures

These disappear gradually by biological reabsorption or hydrolysis and provoke localised inflammation. They are used for deep or non-extractable suturing.

1. Polyglactin 910: Indicated for dermal sutures, subcutaneous cellular tissue, deep suturing and the ligature of small vessels. They have an absorption time of 60 days (conserving tissue support for 28–30 days). There are varieties with a quicker absorption time (Vicryl®rapid) that are absorbed in 10 days and are used for the suturing of children's skin.
2. Polyglycolic acid: Indications similar to the above. They have an absorption time of 90 days and the support of 15–20 days.

4.3.1.2. Removal of stitches

The time (in days) recommended for the removal of stitches together with the indication of the type of suture thread is shown in Table 1.

In the face, it is important to remove the sutures as soon as possible, although adhesive sutures are put in place for an additional 7 days to protect the wound against small traumatismes. In other anatomical regions where the aesthetic result is not as important and scarring is not as quick as in the face, stitches should be left in for longer. In particular, in periarticular regions and in the lower extremities, which have a slower scarring time, stitches are left in for longer than normal.

4.3.2. Suture needles

The needles are designed to take the suture through the tissue producing minimum damage. The selection of these is determined by the type of tissue to be sutured, its accessibility and the thickness of the thread used. There are *straight needles* that are handled using the fingers, which are not used in MS, and *curved needles* that are handled using a needle holder, enabling greater precision; these have different circumference arcs, with those describing 3/8 of a circle or 1/2 of a circle being the most widely used in MS.

The section of the needle can be triangular, conical or spatula-shaped. The triangular ones have cutting edges that enable them to pass through highly resistant tissue, such as skin and subcutaneous tissue, these being the needle of choice for MS.

4.3.3. Adhesive sutures

The adhesive sutures consist of porous adhesive paper tape (Steri-Strip®, etc.) capable of bringing the edges of a wound or incision together. They are available in sterile presentations with different widths and lengths although they can be cut to the appropriate size as required. Advantage of adhesive sutures is the speed and simplicity of application when compared to

conventional sutures because they do not require local anaesthesia and they do not leave “stitch marks”.

Indications: For linear and superficial wounds that little tension there, as in the forehead, chin, the malar eminence, the thorax and the pads of the fingers. They are also a good choice for the elderly (or in treatments with corticoids) where the skin is fine and fragile and for reinforcing wounds after the removal of stitches.

Contraindications: Their use on irregular wounds where there is pressure or on wounds where bleeding or secretions cannot be stopped. They are not indicated for use on the scalp or hairy areas, folds in the skin and jointed surfaces.

Application and removal of adhesive sutures: The wound should be dry, free of blood or secretions; substances can be added to increase the adhesiveness of the skin. The adhesive suture is cut, before the removal of paper, to the required size and is then applied using untoothed dissecting forceps or the fingers, first along one edge of the wound and then the other and along the length of the wound.

Adhesive sutures are left for as long as a conventional suture would be left in the same anatomical region. Unlike other sutures, a wound with adhesive sutures should not be allowed to get wet during the first few days because of the possibility that they will become unstuck.

4.3.4. Staples

Staples are available in different widths (W: wide staples, R: normal staples), in disposable staplers preloaded with a varying number of staples (35 in the case of large staplers and 10 for smaller ones). The use of staples as compared to conventional sutures has certain advantages, such as the speed with which the suturing is carried out, their resistance and null tissue reaction (the material is stainless steel).

Indications (1): In linear injuries to the scalp, the trunk and the extremities and, for the temporary closure of wounds, in patients who are going to be transferred to another specialised service.

Contraindications: On the face and hands. In areas where a TAC or MRN scan is to be carried out.

Application and removal of staples: The staples are applied with the dominant hand, whereas the non-dominant hand brings the edges of the skin closer and everts or overturns them. Staples are kept in place for the same length of time as a conventional suture would be kept in the same anatomical region. The removal of the staples is carried out using a staple remover.

4.3.5. Tissue adhesives (glues)

One of the latest advances in the treatment of wounds has been the development of tissue adhesives or tissue glues (22, 23). These products (cyanoacrylates) act as an adhesive, using an effect of joining the epidermal layer (the stratum corneum), thus keeping the edges of the wound joined together. The compound forms a bridge over the edges of the wound creating

an effective joint during a period of 7–14 days. After this time, the major part of the compound is loosened and detached, together with the *stratum corneum*, before degradation takes place.

Application technique: After placing the patient in a *decubitus* position and cleaning the wound well and stemming the blood flow, the following steps are taken:

- Bring the edges of the wound together precisely using the fingers or dissecting forceps.
- Apply the glue to the external surface of the skin, avoiding it penetrating inside the wound. The application process is repeated at least three or four times.
- Keep the edges in contact for 30–60 seconds to achieve an adequate degree of polymerization. The final tension is produced 2 minutes after application.
- After application, no dressings are required. The wound should be kept dry for 5 days and subsequently it can be moistened with care, avoiding prolonged contact with water. The glue will disappear after a period of 7–10 days.

Indications: Tissue adhesives are a good alternative for the closure of wounds that meet the following criteria [1, 22]:

- They would require 4/0 sutures or finer.
- They are not associated with multiple trauma.
- The patients do not have any peripheral vascular illness, diabetes mellitus, haemorrhagic diathesis or a history of the formation of keloids.
- The cause is not an animal bite, puncturing, decubitus ulcers or injuries arising from crushing, which provokes star-shaped lesions.
- There are no visual signs of active local or systematic infection, visible contamination or lifeless tissue.
- They are not localised around the pigmented edges of the lips in the mucous areas or in areas covered in dense hair.

5. Basic surgical manoeuvres

The practicing of MS requires a knowledge of the correct handling of surgical instruments (described above) and control of the consecutive steps of each surgical technique: that is to say, capabilities in surgical manoeuvres.

5.1. Surgical incision and dissection

Dissection is a manoeuvre that consists of detaching layers of similar tissue. There are two methods for carrying it out: one is called blunt dissection (non-cutting which is generally carried out with Metzembaun scissors or with mosquito forceps) and the other known as cutting, where a scalpel or scissors are used. In MS, the more frequent degree of dissection

should be for the face and neck, which corresponding to the joint between the dermis and the subcutaneous tissue, and for the scalp, the subgalea layer and for the trunk and the extremities, which corresponding to the joint between the superficial and the profound fascias [26].

Dissection manoeuvres must be carried out in a delicate manner and with the field of operation well exposed, never obscured, so as not to damage important structures in an irreversible manner; it is therefore fundamental that one knows the topographic anatomy of the area being operated.

5.1.1. Incisions in MS

The design of the incisions should be done bearing in mind that the type of lesion that is to be treated so, for excisions, it is necessary to leave an adequate margin (1–2 mm) of healthy skin around the wound and in depth, depending on each wound. On many occasions, it is useful to mark out the planned excision so that reference points are not lost when surgical swabs are put in place.

Likewise, when planning a surgical incision, it is necessary to take into account the anatomy of the area to be operated upon and the lines of minimum tension; in this way, an appropriate scar will result both from an aesthetic and from a functional point of view. It is therefore necessary to direct incisions parallel to the lines of minimum tension (coinciding with the lines of facial expression and the lines of cutaneous relaxation; Figure 6).



Figure 6. Graphs of the lines of minimal tension (the lines of Langers)

5.1.2. Types of incisions in MS

5.1.2.1. Incision

These are used to achieve a surgical exposure of the more profound layers (e.g., epidermal cysts, lipomas) or for the draining of ulcers. They can be lineal, angled, or curved depending on the anatomical area to be treated and the type of surgery.

5.1.2.2. Fusiform excisions

These are used to extract cutaneous lesions with a margin of healthy skin around the wound and in depth [27, 28). As a general rule, the length of the ellipse should be three times its width and the ends should have angles of 30° (Figure 7). They should be directed in accordance with the lines of minimum tension not according to the major axis of the wound.

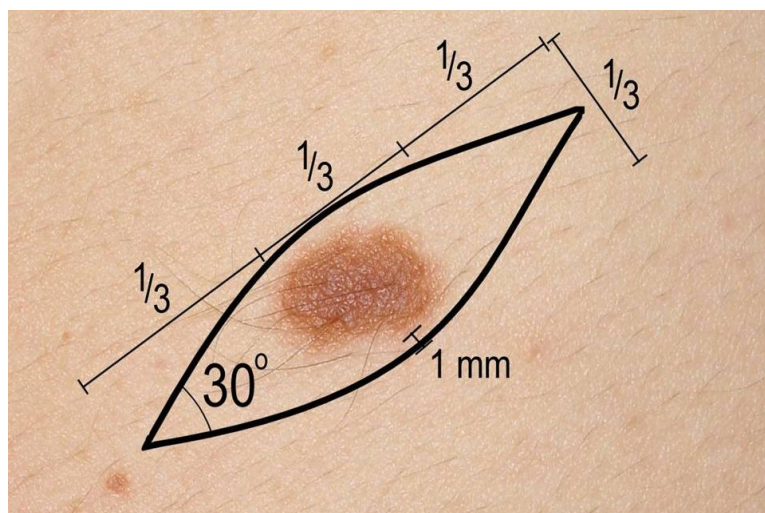


Figure 7. Characteristics of the fusiform excision.

5.1.2.3. Tangential excision

These are also known as “shaved” and consist of the extraction with a scalpel or scissors of very superficial lesions, which would scar at a second attempt. They should only be carried out on certain lesions which leave no element of diagnostic doubt [28, 29].

5.2. Haemostasis

This is a surgical manoeuvre that enables not only the control of bleeding but also a clarifying of the view of the surgical anatomy. The majority of haemorrhages in MS (where incisions or wounds do not tend to affect important vessels) are controllable with pressure using a gauze. On the other hand, a compress bandage over the wound during the immediate post-operative period reduces the possibility of bruising or seromas forming.

5.2.1. Types of haemostasis

- The *tourniquet* is not a method of haemostasis “per se”, although it does provide a temporary control of the haemorrhage enabling the wound to be explored and reducing the time of surgery. Its use in MS is limited to the fingers (surgery of nails, etc.) and should not exceed 15 minutes.
- *Haemostasis forceps*. After identifying the vessel that is bleeding, it is pinched using the tips of untoothed haemostasis forceps, ensuring that when they are clamped the haemorrhage ceases. Attempts at blind clamping a bleeding vessel in the depths of a wound should be avoided because of the risk of damaging important structures.
- *Ligatures* are threads that are tied around a blood vessel to occlude light and avoid the haemorrhage. After identifying the bleeding vessel, it is held by means of haemostasis forceps and a thread (absorbable 3/0 thread) is passed below the forceps and tied. The ends are left short.
- Haemostasis by means of *electrocoagulation* uses an electrical scalpel as a means of coagulation.

5.3. Suturing techniques

The objective of a suture is to draw tissues with similar characteristics together so that they can scar correctly. To achieve an optimum surgical closure, the principles shown in Table 2 should be taken into account [30, 31].

<p>1. Tension must be avoided: Suturing a wound under tension decreases the blood supply to its edges, increasing healing problems and the risk of infection.</p> <p>2. Eversion of the wound edges: Due to the tendency of scars to contract over time, if surgical edges are left slightly elevated above the plane of the skin, they will flatten over time, producing a more cosmetically acceptable result. One of the keys to proper surgical skin edge eversion is to introduce the needle at a 90° angle with the plane of the skin so that the suture, once tied, lifts the skin</p> <p>3. Closure by layers: For most minor surgical interventions, a single (cutaneous) layer closure is enough. However, if there is any tension, if the wound is very deep and involves several surgical layers or if there is much dead space, a multilayer closure may become necessary. A multilayer wound closure requires thick fascia or dermis for the placement of internal sutures because fatty tissue lacks consistency to support sutures.</p> <p>4. Type of suture material: It is a less important factor than the previous principles. If a suture is removed too late, it will cause scarring in the areas of entry and exit of the suture ("cross-hatching"). To avoid it, stitches shall be removed as soon points as possible. The choice of suture material and its thickness are also important.</p>
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Table 2. For an optimal surgical closure, the following principles should be remembered

5.3.1. Discontinuous sutures

Discontinuous sutures are those where each stitch is independent of the following one. They are the most appropriate for MS because it is easier to distribute the tension, favouring the drainage of the wound. Also, the stitches can be removed more easily.

5.3.1.1. *Simple stitch (percutaneous)*

This is the suture of choice for suturing skin and is only used in combination with buried stitches if the wound is deeper.

5.3.1.2. *Simple stitch with an inverted knot (buried)*

This is used for drawing together the deeper layers, reducing the tension and for obliterating empty spaces before suturing of the skin; it is not necessary for superficial wounds. Absorbable materials are used, and the suturing is carried out in such a way that the knot is left in the depths of the wound, reducing the possibility that the stitch might be exposed through the incision. The knot is cut right down to reduce the amount of foreign matter inside the wound.

5.3.1.3. *“U” or ‘Upholsterer’s stitch’*

This is a double stitch that increases the resistance of the suture but is more aggressive around the edges of the wound. There are three types [30, 32]:

1. *Vertical*: Apart from producing good eversion or overturning of the edges of the wound, it adequately obliterates empty spaces at depth. It is useful in areas of flaccid skin (the backs of hands and elbows), where the scar tends to invaginate or fold inwardly.
2. *Horizontal*: This suture also provides good eversion of the edges of the wound, above all in areas where the dermis is thick (palm of the hand or sole of the foot).
3. *Horizontal semi-buried Upholsterer’s stitch*: This is used to suture corners of wounds or surgical edges with different thicknesses.

5.3.2. *Continuous sutures*

These make the drainage of the wound more difficult, so they are contraindicated if there is a suspicion of infection or in very contaminated wounds. The stitches are more difficult to remove, and it is not possible to remove them in various sessions [30].

5.3.2.1. *Simple continuous suture*

This is a succession of stitches with an initial knot and another at the other end. It is scarcely used in MS.

5.3.2.2. *Continuous intradermal sutures (subcuticular)*

This type of suture enables the suturing to be carried out without passing through the skin, avoiding scarring from “stitch marks” and providing an optimum aesthetic result. They are carried out by passing the suture through the dermis in a horizontal manner, along the length of the whole wound; at the ends, the suture can appear outside the skin (extractable intradermal suture), in which case it is carried out with non-absorbable monofilament material, or it can be knotted inside the wound (non-extractable intradermal suture), in which case absorbable material is used. Carrying out this suture with multifilament materials, such as silk, should

be avoided, as it would be very difficult to remove the suturing material. It is used in wounds where it is necessary to maintain the stitch in place for a long time (more than 15 days). Its use in MS is limited.

5.3.3. *Knotted*

Instrumental knotting is carried out using the needle holder and curved needles. In MS, where the surgical area is superficial and accessible to instruments, instrumental knotting is the preferred technique, as it provides greater precision in the suture, except where the ligaturing of small blood vessels is concerned where it is preferable to carry out *manual knotting* (which is carried out with the fingers).

The knot that the surgeon should use consists of a double loop followed by various simple loops. The advantage of this knot is the safety that is provided by the first double loop, which avoids the knot untying while the following loops are carried out.

If the knot is tied with a multifilament thread (silk) then three loops are sufficient; if it is monofilament (nylon, polypropylene), it is preferable to carry out a further loop.

It is convenient for the knot to be placed to one side of the wound rather than on top of the incision. This enables a better view of the wound, it interferes less with scarring and facilitates the removal of the stitches.

6. Considerations prior to minor surgery

6.1. Diagnosis of the lesion to be treated

The indications for MS are carried out on the basis of the diagnosis of the lesion to be treated; an erroneous diagnosis can lead to incorrect treatment and to the loss of clinical information that is relevant to the patient's prognosis [8]. It is therefore essential that the FP should have extensive knowledge of the lesions that are most frequently susceptible to MS and, should there be any doubts regarding the nature of the lesion, these should always be resolved through consultation with other specialists [10, 11, 33, 34]. Each lesion has a surgical procedure that is considered to be optimum or of choice, whereas other alternatives are merely valid or can be contraindicated [1, 13].

6.2. Areas of the body at risk from MS

There are certain areas of the body that are considered to be at risk when MS procedures are carried out. This is due to the superficial location of anatomic structures, susceptible to damage during the surgical intervention. To avoid damaging these structures, it is necessary to know their theoretical routing and keep the surgery, wherever possible, on a superficial level (subcutaneous superficial cellular tissue). Furthermore certain areas (face, neck) are also considered at risk by the aesthetic impact of poor technique may result [1].

The areas at risk during MS include the facial and cervical regions, the axillary and supraclavicular regions, the wrists, hands and fingers, the groin area, the popliteal fossa and the feet (Figure 8A and 8B).

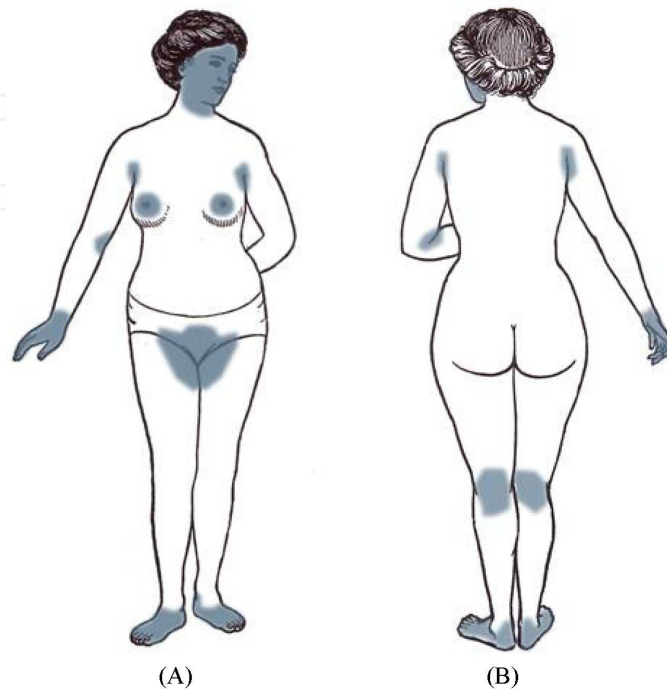


Figure 8. A and B. MS risk areas in Family Medicine

Together with the above considerations, we should also consider those anatomical areas with a greater tendency for pathological scarring: the deltoid region, shoulder, area of the sternum and the interscapular region. Also, the skin of black patients and children is especially prone to the appearance of hypertrophic scars and keloids. Therefore, in these cases, it is important to discuss these possibilities with the patients, especially if there are only aesthetic reasons for the surgery.

6.3. Histological diagnosis

All lesions extracted during MS should be sent on to a pathological anatomy service so that the correct diagnosis can be carried out. No intervention will finish without such results being available [1].

7. Procedures in MS

During MS in Primary Care, different procedures are carried out, which would each, in their own right, be the object of action protocols (the extraction of lipomas, epidermal cysts, ingrown toenails, punched biopsies, curettes, cryosurgery of benign lesions). For this reason, the main

and ideal techniques for dealing with the majority of these superficial dermatological lesions through MS are summarised below.

7.1. Fusiform excision

This is an exeresis technique designed in the form of a spindle; this spindle should involve all levels of the skin, including the fatty tissues, so as to extract the lesions with a margin of safety on the surface and in the depths of the lesion. Thus, the technique enables not only a histological diagnosis and simultaneous treatment but also a closing suture that is technically simple with very good aesthetic results [27, 35].

The procedure consists of the following steps:

1. **Design of the excision**, which is marked out with a marker pen following these parameters: The longitudinal axis of the spindle will be three times greater than the transverse diameter and parallel to the lines of cutaneous tension, and the angle at the ends will be $<30^\circ$ so as to avoid the appearance in the scar of “dog’s ears”. There must be a margin between the lesion and the excision of 1–2 mm (or greater, depending upon the lesion to be extracted).
2. **Preparation of the surgical field**: cleaning and disinfection.
3. **Anaesthetic infiltration**, covering all of the edge of the incision and the tissue that is to be sectioned or sutured.
4. **Superficial cutaneous incision** along the length of the spindle, affecting all of the dermis in order to avoid irregular edges. The incision is carried out by means of a clean cut with a scalpel, not sawing, grabbing the handle of the scalpel like a pencil, tractioning (or pinching) the area with the fingers of the non-dominant hand and following the line marked out by the design (Figure 9).
5. **Block excision**: traction is carried out with the non-dominant hand (using toothed forceps) from the end of the spindle and, with the blade of the scalpel, a deep incision is made (always with a direct view in the form of a wedge until fatty tissue is reached, so that the lesion can then be extracted as a block).
6. **Haemostasis** of the surgical area: in general, if we are using anaesthesia with vasoconstriction, there is little bleeding and haemostasis is achieved using finger pressure with a gauze.
7. **Suturing** of the wound by layers: the majority of MS interventions only require the closure of the superficial cutaneous layer. However, if there is tension, if the incision is deep and involves several layers or if there is an empty area, then closure on several levels may be required. The suturing of the deepest layer should be carried out with absorbable sutures using inverted stitches. Subsequently, the superficial suturing is carried out using non-absorbable sutures. The number of stitches will depend on the tension on the wound, the thickness of the thread and the type of closure.
8. **Placing of a sterile dressing**, following the cleaning of the area.

9. **Dispatching of the extracted element to pathological anatomy**, in a container with formaldehyde at 10%.
10. **Monitoring:** After 48 hours, the wound can be washed softly and the patient should be warned of the post-surgical risks and advised about self nursing of the surgical wound. The patient will be given an appointment for the removal of the stitches and to inform him or her of the histological results.



Figure 9. The incision is made with a clean knife cut along the line painted design, while we traction (or pinching the area) with the fingers of the nondominant hand

8. Good clinical practice in MS [1]

8.1. Pre-operative study

During basic minor surgical interventions, it is not in general necessary to carry out a systematic pre-operative study. However, as we are dealing with our own patients, we will have their medical history available, which we will complement with a series of questions directed towards evaluating the situations where minor surgery might pose a risk or might be contra-

indicated. Tables 3 and 4 summarise the precautions and contraindications of MS in Primary Care.

<ul style="list-style-type: none">• Diabetes mellitus and peripheral vascular disease when planning surgery in the lower extremities• In patients with chronic use of immunosuppressors (corticosteroids)• Do not add vasoconstrictor to local anaesthetic in patients with arrhythmia, severe hypertension, hyperthyroidism, pheochromocytoma, pregnancy and in anaesthesia of the fingers• Anatomic areas of risk (Figure 8 A and 8B)• Research specifies the use of oral anticoagulants and antiplatelet since we must raise the suppression (assess risk-benefit) prior to the surgery. Currently, Holbrook et al [36] considered that these patients can be operated without changing its pattern whether taking oral anticoagulants (if your INR is within the therapeutic range) as antiplatelet• <i>Specific precautions with the use of electrocautery:</i> Keep the patient’s skin clear from any metallic object (metal dentures, implants, prosthesis and IUD are not contraindicated), Do not use alcohol or use the bovie near a source of oxygen . Use latex gloves for insulation• <i>Special precautions for cryosurgery:</i> Patients with areas of potential circulatory compromise due to the risk of necrosis. Hairy areas in which hair loss could ensue. Hyperpigmented areas (black or dark skin) where the use of cryosurgery can leave areas of hypopigmentation. Patients with high levels of cryoglobulins.
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Table 3. Precautions of MS in family medicine

<ul style="list-style-type: none">• Unless justified exceptions, never involve, malignant skin lesions in family medicine. Likewise, if the pathological result of lesion excised is malignant, should be performed interconsultation with other specialists.• Allergy to local anaesthetics.• Pregnancy: we must postpone the surgery, and if malignancy is suspected, refer to the appropriate specialist.• Acute intercurrent disease: will be postponed until recovery.• Doubts about the motivations of the patient: surgery is contraindicated in patients whose motivation for it is questionable or if there is excessive preoccupation with the aesthetic result• In patients with severe psychiatric disorders or uncooperative patients is contraindicated performing MS in family medicine.• Refusal to any activity reported minor surgical consent.

Table 4. Contraindications of MS in family medicine

8.1.1. Pre-medication

In the case of patients who are anxious about the intervention, we can consider pre-operative sedation and can use diazepam 5–10 mg oral or sublingual or lorazepam 1–5 mg sublingual, administered 30 minutes prior to the intervention.

8.2. Intra-operative complications

A vasovagal syncope is the most frequent form of complication and is common in young males. Treatment consists of placing the patient in the Trendelenburg position, administering oxygen

and fluid therapy, and if it is deemed necessary, the use of atropine can be considered: 0.5–1 mg SC or IV (maximum 2 mg). In general, the majority of episodes recover spontaneously after a few seconds or a few minutes.

In centres where programmed MS is carried out, it is obligatory to always have CPR cardio-pulmonary resuscitation (CPR) materials and medication to hand (as previously indicated).

8.3. Post-operative complications

Table 5 lists the complications that might appear following an MS intervention.

<ul style="list-style-type: none">• Hematoma-seroma: To prevent their formation, a correct intraoperative hemostasis is paramount plus suturing the wound in layers with no gaps and, finally, applying a compressive bandage.• Infection: Can occur in up to 1% of minor surgical patients and it appears as swelling, redness of the wound edges and, sometimes, purulent discharge. Symptoms such as fever and / or chills are only rarely seen. Infections are treated by removing some of the stitches, plus daily cleaning and disinfection of the wound and allowing the wound to close by secondary intention. If necessary, a drain may be inserted into the wound and an oral antibiotic regimen may be initiated.• Wound dehiscence: The separation of the edges of the wound before proper healing. There are predisposing factors secondary to surgery (excessive tension on the edges of the wound, use of inappropriate suture material or early suture withdrawal) or it may be the final phase of other complications such as hematoma or infection. After wound dehiscence, wound repair will take place by secondary intention, resulting in a poor cosmetic result.• Hypertrophic scar and keloid: are very difficult to prevent and their most frequent location is in the chest, shoulders and upper back, in young people and blacks. Treatment of these scars is difficult and results are often discouraging. Occlusive treatment or steroid injections may be tried.

Table 5. Postoperative complications in MS

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