# Introduction to Skin Surgery in the Office - some practical tips

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#### Introduction

This series in MEJFM reflects my experiences as a surgeon and the problems I have encountered over many years performing, photographing, videoing and teaching surgery in the office. Here I am attempting to impart some of the knowledge I have learned in a practical rather than theoretical sense. This is my approach to the issues I have confronted in my role as an educator and in designing and conducting surgical office skills workshops in skills laboratories throughout Australia and internationally. These have been on behalf of the Royal Australian College of Surgeons, Monash University, Queensland University and many private organizations including those associated with rural medicine and international medical graduates (IMG). In Australia this comprises up to 25% of the primary care workforce.

The titles EXPLORING ESSENTIAL SURGERY, EXPLORING ESSENTIAL RADIOLOGY are co authored with Dr Gerry Ahern and are prominently positioned on the McGraw Hill Access surgery and medical subscription websites.

In the workshops I have found that attendees like best hearing about his mistakes. But from these errors of judgment I have adopted techniques to overcome the problem.

I am going to take you on this journey in ensuing articles using the visual medium to enhance the process. The series is titled: Brygels SURGISKILLS.

Local anaesthesia, knot tying, suturing materials, suturing methods and tissue handling are the introductory topics. Then there are a whole range of topics including all the skin cancers, sebaceous cysts and lipomata, Ingrowing toenails.

Pre operative assessment and post operative care are all considered.

## When surgery is performed on any skin lesion or subcutaneous lump, the aim is:

- **a.** To completely excise the lesion and therefore provide optimal treatment and cure.
- **b.** To preserve normal local function.
- c. To obtain a good cosmetic result.

These principles should be adhered to in all other aspects of skin surgery, such for example, the drainage of an abscess, the removal of foreign bodies, the management of lacerations and trauma.

The primary care practitioner can provide appropriate treatment and management of all these conditions.

Excision of skin lesions, management of lacerations and trauma, plus treatment of infection and abscess are among the most common type of problem encountered in general medical practice.

Skin has a basic structure but there are specific characteristics in each body area which need to be taken account of in surgery.

The properties of skin which may alter from one site to the other and from one person to another.

The properties of skin to be considered are as follows:

• Thickness, stress lines, creases, blood supply, elasticity, mobility.

• The relationship to underling vital structures such as nerves ,vessels tendons and joints is of the utmost importance

All of these influence the method used in surgical operations. Each area of the body has its own particular characteristics.

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#### For example:

• The blood supply is poor on the shin where the skin is thin particularly in the elderly. This influences how to treat or repair pretibial lacerations where suturing may be under tension and thus followed by tissue necrosis. • The skin is thick on the back. As well the distracting forces are marked. Thus heavier sutures are required - may be a 2/0 suture as opposed to a 4/0 suture. The sutures may even be left in for 2 weeks. Maybe remove half earlier. For 3 months the scar will look perfect and fine ,but it often then stretches despite expert post operative care.

On the other hand skin is lax and mobile on the dorsum of the hand and much easier to incise, suture and close a defect without tension.

The skin over the sternum has a propensity for keloid formation. An incision on the chest wall is notorious for developing a keloid. Race is also a significant factor here. Thus experience alerts you immediately to the problem you may encounter in any particular area

Factors that must be considered when making decisions on the method of treatment. There are many factors that influence the decision to operate and the choice of method of treatment. Decisions are often influenced by the patient's age, ethnicity, community values, emotional status, patient expectations and associated medical problems. Cost and convenience may also be factors.

In addition there is often more than one way to treat a lesion. This needs to be explained to the patient from a risk management point of view. This is part of the informed consent process. An example here would be for basal cell carcinoma where there may be a choice between surgery, radiotherapy, photo dynamic therapy and curetting depending on the type and number of lesions, and even the training of the doctor.

#### Trauma

The program has been designed to demonstrate a diagnostic approach using the methodology of taking a history and eliciting physical signs.

This has been included in this program because the fundamentals of management are important to all practitioners.

Cases of tetanus still occur. Many cases occur from simple gardening injuries. It is becoming apparent that even in our modern society, immunisation is still a necessity.

The correct treatment of all wounds is essential. The principles and practical aspects of management should be learnt by all those in the medical field.

As with any lesion, abscess or foreign body, a history of the onset, mechanism of injury and total assessment of the patient will avoid possible mistaken diagnosis and adverse sequelae.

Trauma does not only involve the skin. It can lead to damage to deeper structures, resulting in devitalisation of the tissues and possible injuries to nerve, arteries, veins, muscles, tendons, bone or other structures.

Infection still remains one of the major hazards of wounds and surgical operations. With any laceration, the priority is removal of foreign matter and devitalised tissue. This mechanical treatment which is important in prevention of infection, is termed debridement.

Judgement, based on training and experience, is essential in appropriate management for all wounds. A decision may be required as to whether the wound can or should be closed and if not, how the wound should be covered.

Anaerobic conditions in ischaemic or contaminated tissues can lead to the development of tetanus, or gas gangrene, particularly in the medically compromised patient.

The prevalence of hepatitis B, hepatitis C and AIDs has drawn attention to the risk to which the health worker is exposed. Increasing protection is being sought. Infection control routines have been set up in most clinical practices. Gloves, masks and goggles have assumed a new role in clinical practice, both in the office surgery setting and operating theatre.

Rather than relaxing criteria because of the availability of antibiotics, infection control procedures have assumed increasing importance. In many Australian hospitals we are losing the battle against antibiotic resistant organisms and chronic infections, making the GP office a more attractive environment for minor surgical procedures. Office surgery has increased rapidly as costs of hospitalization have soared.

The isolation of body substance is now recommended, for blood and all body fluids are potentially infectious.

Aseptic technique is practiced not just when the patient is thought to be in a high risk group, for example, a drug user or homosexual, but as a routine.

#### Key Concepts and Practice Tips.

o Assess all significant skin characteristics in the region before attempting surgery.

o Always consider the functional and cosmetic implications when planning incisions.

o Consider factors which may compromise healing (e.g. vascular disease) or affect the cosmetic result (e.g. keloid tendency) in the particular patient or site.

o All dead tissue and foreign material must be removed from traumatic wounds.

o Remember that superficial appearances may conceal damage to deeper vital structures.

o Assess the site, number and depth of foreign bodies (clinically, by ultrasound and by X-ray if necessary ) before attempting removal.

o A foreign body may present as an abscess some time after the initial injury.

o Allow sufficient time to find and remove a foreign body. Ensure approach planned before starting. Consideration needs to be given to attaining a bloodless field by use of a tourniquet.

o A cutaneous lump may be due to a lesion in any layer or appendage of the skin, or in underlying tissues.

o Accurate clinical assessment and diagnosis is vital.

o When operating on a skin lesion, beware of underlying important motor nerves which are superficial at specific sites (e.g. mandibular branch of facial nerve over the body of mandible, the accessory nerve in posterior triangle of neck, and the lateral popliteal nerve over neck of fibula). Motor nerves or sensory nerves may be in danger. Sensory may include nerves such as the supratrochlear, supra orbital or occipital in the forehead and scalp.

Others to be aware of are the post auricular and greater auricular of the ear.

The knowledge of the anatomy of these nerves enables simple nerve block to be performed.

Once again the skin over the ear is taut and painful to infiltrate with local anaesthetic and thus a nerve block may be appropriate.

o Avoid splashing antiseptics into the eyes or on mucosa. o Alcoholic skin preparations should not be used on sensitive areas of the skin (e.g. scrotum) and can ignite when in contact with diathermy.

o Incisions should be placed in skin creases where they are obvious (particularly in the trunk, neck and face). Avoid incisions which cross joint lines, pressure areas, hair lines and eyebrows.

Always align mucocutaneous junctions. The first stitch does this, then follow up with the remainder of the suturing

o Areas with poor blood supply (e.g. skin over the tibia) may not heal well.

o Excess tissue tension impairs blood supply to the wound edge and delays healing.

o Areas with a rich blood supply (e.g. scalp, face and neck) tend to bleed more readily but heal well.

o Beware of factors (e.g. aspirin, anti platelet and anticoagulants or even a family or past history), which may increase bleeding. Surgery may proceed in some cases but the risks need to be considered and explained. Extra care is required. There are some circumstances where these medications can be modified and others where they cannot.

o Excess bleeding may lead to the formation of a haematoma and subsequent infection can cause an abscess.

o Apply pressure as a first measure to control excessive or unexpected bleeding during the procedure..There are other techniques to control bleeding.

o All deep wounds should be closed in layers.

o Avoid leaving a dead space by suturing deeper layers separately or by deep through and through sutures (in trunk).

o Avoid adherence of skin to deeper structures (which can result in a depressed scar) by subcutaneous sutures apposing fascia and muscular layers.

o Fat does not hold sutures well.

o If there is a high risk of infection, delay closure of the wound.

o Interrupted sutures into the skin edge aid haemostasis particularly in vascular areas.

o Everted edges heal better- quicker and with a better scar than inverted edges.

o Mattress sutures help to evert the skin edges preventing inversion which delays healing.

o A subcuticular suture only opposes the epidermis and dermis.

o To some patients the fear of suture removal may be greater than that of the operation.

o Some regions can tolerate some tension to bring edges together. However, in the fingers, lower leg, foot or palm only minimal tension is permissible.

o Err on the side of leaving sutures in place. If there is any doubt, do not remove all of them at the one time. This will prevent wound disruption.

o If sutures appear too tight and causing ischaemia, early removal is advisable.

o Leave sutures for a longer time in areas under greater tension with a poor blood supply or with any other factors which may delay healing.

o A better scar is obtained by using a large number of fine sutures rather than fewer, heavier sutures more widely spread.

o Think of ways to reduce wound tension and swelling (e.g. firm dressings, immobilization, splints).

o Bandages which are too tight impair blood supply.

o Elevation of the limb minimises postoperative swelling.

o Follow up carefully so that postoperative complications can be detected and treated promptly.

o Advise the patient to report urgently any increasing pain, swelling, discolouration, odour or fever.

I hope these simple tips will assist you in the office when taking care of your patients and we will continue to present some further tips and visual examples of surgery techniques in the coming series.

### Series One - Lacerated Left index finger in 35 year old theatre sister

This was a clean incised kitchen wound with a sharp knife. It is on the volar aspect of the index finger. It has been poorly managed due to the basic error of not examining the finger for nerve or tendon injury.



#### **Presenting injury**

The patient, a theatre assistant had presented to casualty with a bleeding finger and complaining about numbness. After a long wait local anaesthetic was infiltrated through the wound. The patient had complained that the bleeding was profuse and continued to spurt when pressure was released.



#### Injury prepared for surgery



Side view Arteries and nerves



**Sutured** The wound was eventually sutured.



**Incorrect splinting** Note that the splinting is incorrect.







**Correctly splinted now** The finger is correctly splinted this time in the position of function. This avoids stiffness caused by immobilization.

5 weeks later

Post stiffness

The scrub nurse complained to the surgeon in her theatre 2 days later about the numbness on one side of the finger. This lead to a referral for digital nerve repair. There was also a tendon repair of a partially divided flexor tendon .The skin was sutured this time with a synthetic absorbable 3/0 vicryl suture.Not my preference and it can be seen there is a severe inflammatory reaction with the sutures being spat out intermittently.This occurs more commonly with the multifilamented or braided suture.

The images demonstrate that the initial immobilization was with a straight splint. This was incorrect. This could lead to permanent stiffness. Six months later there is still some restriction on flexion of the finger.

#### Interestingly :ANATOMICALLY

**1-** With the fingers and toes the nerves are superficial to the arteries .Thus if an artery is divided (suggested by it spurting) a nerve is likely to have been divided.As well there is a chance there is a tendon injury.

2- Examination must be carried out before the local is used.

**3-** Whilst local can be injected directly into a laceration it may be advisable to avoid the swelling in fingers to allow better inspection- Thus do a digital block.

**4-** Splinting of fingers, unless there is a specific reason should be in position of function - not as in this case. This is to avoid stiffness.

**5-** Some surgeons will use absorbable sutures in the skin - It would not be my choice because of increased reaction with a braided suture.

Absorbable sutures are used in the skin by some surgeons, because they may not need to be removed and thus there is possibly less pain. This also saves the surgeon time.