

AMPUTATION

Lec#12

AMPUTATION

- ◉ Amputation: the surgical removal of a part of the body, a limb or part of a limb
- ◉ Amputations can occur after an injury (traumatic amputation) or deliberately at surgery.



INDICATIONS AND INCIDENCE

⦿ Trauma

- Common types of accidents and injuries leading to amputation include those involving motorcycles and automobiles, farm machinery, firearms and explosives, electrical equipment, power tools, and frostbite

⦿ Disease

- Peripheral vascular disease, diabetes mellitus, arteriosclerosis, and chronic osteomyelitis

INDICATIONS AND INCIDENCE

- Tumors

- Bone tumors that are very large and invasive

- Congenital defects

- Convert a deformed limb into a more functional one that can be fitted with a prosthetic device

DIAGNOSTIC TESTS AND PROCEDURES

- Vascular studies
- Pulse volume recording
- Thermography
- Doppler ultrasound
- Biopsy

MEDICAL TREATMENT

- Must include appropriate treatment and control of underlying diseases or injuries
 - Diet, medication, and exercise help patients with diabetes and poor peripheral circulation
 - If peripheral vascular disease, encourage to stop smoking; nicotine causes vasoconstriction
 - Trauma patient may have to be stabilized to maintain normal heart rate and blood pressure

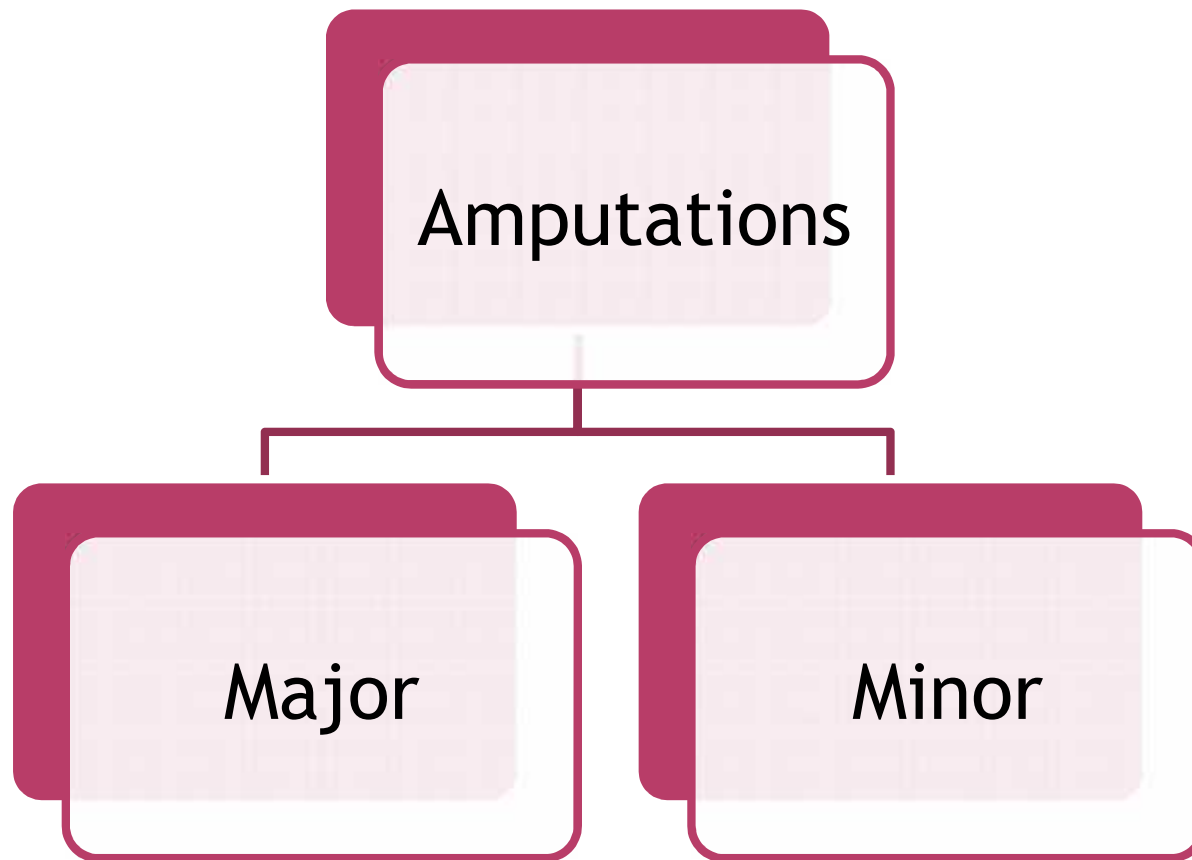
SURGICAL TREATMENT

- Amputation at the lowest level that will preserve healthy tissue and favor wound healing
- Surgeon chooses one of two procedures, depending on condition of the extremity and the reason for the surgery
 - Closed amputations
 - Create a weight-bearing residual limb, important for lower extremity amputations
 - Open amputations
 - The severed bone or joint is left uncovered by a skin flap
 - Required when an actual or potential infection exists, as may occur with gangrene or trauma

WHY DO PATIENTS NEED TO UNDERGO AMPUTATIONS?

- the arteries of the legs have become blocked due to hardening of the arteries (atherosclerosis)
- insufficient blood supply to the limb
- diabetes can cause hardening of the arteries, about 30-40% of amputations are performed in patients with diabetes
- Ulcers are recurrent in many patients and approximately 5-15% of diabetic patients with ulcers will ultimately require an amputation
- hardening of the arteries occurs most commonly in older men who smoke.

WHAT SORT OF AMPUTATIONS CAN BE PERFORMED?



MAJOR AMPUTATIONS

- amputations where part of the leg is removed
- usually below the knee or above the knee
- usually before the operation surgeon to decide at what level the amputation will be performed (above knee or below knee)
- Sometimes gangrene or infection will only involve a toe or part of a foot and a limited or minor amputation can be performed. This is only worthwhile if the surgeon thinks that the wound that is created will heal. In some patients, it is better to try a limited amputation if there is a chance of healing, but to be prepared to proceed to a major amputation if healing doesn't take place.

MINOR AMPUTATIONS

- ◉ where only a toe or part of the foot is removed.
- ◉ **ray amputation** is a particular form of minor amputation; where a toe and part of the corresponding metatarsal bone is removed.
- ◉ After minor amputations the wound is not always closed.
- ◉ If infection is present or too much skin has had to be removed then the surgeon may leave the amputation wound open.

HEALING

- ◉ most important factors in healing is the blood supply to the tissues
- ◉ If the blood supply is damaged or impaired it may not be possible for the tissues to heal even after a minor amputation
- ◉ tissues will clearly not heal because of a poor blood supply
- ◉ no test can predict in every patient whether healing will take place and it is a matter of surgical judgement and experience whether a wound is likely to heal or not

GRITTI-STOKES AMPUTATION

- Amputations through the knee joint or just above the knee joint



SYMES AMPUTATION

- amputation of just the foot can be performed with a cut through the ankle joint.



BELOW KNEE AMPUTATION

- ◉ 2 major techniques used,
- ◉ **posterior myoplastic flap** (Burgess technique) where the skin and muscle from the calf are brought forward to cover the shin bones after they have been divided (see below left).
- ◉ **skew flap** (Kingsley Robinson technique) in which the muscles of the calf are brought forward in the same way as in the posterior technique but the skin flaps are skewed in relation to the muscle.

ABOVE KNEE AMPUTATION

- bone in the thigh (femur) is divided about 12-15 cms above the knee joint and the muscle and skin closed over the end of the bone in a similar way the the below knee amputation.



WHAT ARE THE RISKS OF AMPUTATION SURGERY?

- ◉ significant risks attached to elderly having hardening of the arteries.
- ◉ chances of dying in hospital after a major amputation are somewhere between 10% and 20%.
- ◉ between 1 in 10 and 1 in 5 patients, undergoing a major amputation for hardening of the arteries, die in hospital.
- ◉ younger and healthy the risks of an amputation are usually much less.



COMPLICATIONS

- General
- Local



GENERAL COMPLICATIONS

- ⦿ chest infections,
- ⦿ angina,
- ⦿ heart attacks and strokes.
- ⦿ Because your mobility is restricted after an amputation, pressure sores can also develop. The nursing staff particularly will make great efforts to avoid this occurring. Special mattresses and beds are used to reduce pressure on areas at risk of sores. Regular turning to relieve pressure is also important.

LOCAL COMPLICATIONS

- wound infections that can develop in the stump. Antibiotics are given during the operation to reduce the risk of infection developing at the time of surgery. The stump can sometimes fail to heal or breakdown either as a result of a fall, infection or a poor blood supply. When this happens it can sometimes mean a further operation to revise the amputation or to remove more of the leg.

Thanks

