

## OBJECTS ON DISPLAY

These instruments used in general surgery, orthopaedics and cryosurgery were recently donated to the George Marshall Medical Museum by Theatre staff at Evesham Community Hospital. No longer used in operations, the Museum welcomed the opportunity to acquire them.

1. **Dermatome & Board** Used for skin grafting, when an area of skin surface has been completely destroyed and is replaced by skin from a donor surface and left to epithelialise, Tulle gras (Vaseline gauze) is placed on the board with the donated skin on top and trimmed to shape for application to the site.
2. **Curved cartilage knife** Used in orthopaedic procedures which need bony repairs and remodelling. It cuts through dense connective tissue swiftly and smoothly.
3. **Orthopaedic tenotomy knife** A tendon release is a surgical procedure known as a tenotomy. It involves cutting through or disconnecting a tendon to allow for a greater range of movement. The procedure is used to relieve tight or shortened muscles.
4. **Orthopaedic osteotomes** An osteotome is an instrument that is typically used for cutting bone. A chisel is used to reshape or remove bone. The primary difference being that a chisel has one beveled edge while an osteotome has two beveled edges. A gouge is a hollow chisel that is used to cut into and remove portions of bone, to contour bone or remove cement.
5. **Amputation knives** These knives are used to cut through limb muscle and tissue after an initial skin incision with a scalpel and prior to removal of bone with a saw.
6. **Copper malleable retractors** To isolate digits during surgery and act as splints.
7. **Orthopaedic pistol handgrip drill** Used with appropriate sized drill bits, place in the 'Jacob's chuck' head end of the drill. These are secured by a Jacob's chuck key, to open, close and secure the drill pieces, which make holes to insert wires or screws for fixation.
8. **Laminectomy Retractors** A laminectomy is an operation to expose the spinal canal and its contents. To facilitate the exposure, these retractors may be used. The Charnley Initial Incision retractor has single and double teeth, the hole at the base is to hook through the chain and allow the lead weight to hang down and support the toothed retractors. The Cairns-Northfield self retaining retractor has two blades to keep either side of the wound edge open. It also has two further different sized pairs of blades to use, depending on the size of wound opening required. The Charnley retractor was devised and used by John Charnley, Orthopaedic Consultant, Wrightington Hospital, Lancashire, who also pioneered Total Hip Replacement prosthesis and designed the body exhaust system aimed at a completely bacteria free environment for use by theatre staff directly involved in operative procedures.
9. **The Spembly Cryotherapy Unit** This unit was used for a procedure in which an extremely cold liquid and an instrument called a cryoprobe is used to freeze and destroy abnormal tissue. A cryoprobe is cooled with substances such as liquid nitrogen, liquid nitrous oxide, or liquid carbon dioxide.

With thanks to Museum Volunteers Mrs Ingman and Dr Morrison for curating this display.

## HISTORY OF CRYOSURGERY

The use of cold to treat injury dates back to the Ancient Egyptians, but was developed in the UK in the mid-1800s by British physician James Arnott who began using freezing techniques to treat breast cancer. In 1845 and 1851 he described the successful use of a solution of crushed ice and sodium chloride to not only reduce pain but freeze advanced cancers in the breast and the uterus. He received a prize medal at the Great Exhibition of 1851 for original equipment that allowed reducing tissue temperature to minus 20°C.

The British physician Benjamin Richardson introduced ether spray in 1866, which was replaced by the more effective ethyl chloride freezing spray in 1891. This allowed the German surgeon Freidrich Trendelenberg to freeze nerves as early as 1917.

Modern cryosurgery equipment and techniques were developed between the 1950s and 1970s by pioneers such as Dr John Lloyd in Oxford, UK and Irving Cooper, the founding father of modern neurosurgery based in New York. Working with Engineer Arnold Lee, they built a cryosurgical probe that became the prototype from which every subsequent liquid nitrogen cryosurgical probe was built.

## GEORGE MARSHALL MEDICAL MUSEUM

### CRYOSURGERY

Cryosurgery includes procedures carried out by intensely cold instruments, called probes or nozzles, in which a freezing agent of either liquid nitrogen or liquid carbon dioxide is used to destroy abnormal tissue. 'Cryo' is from the Greek 'Kruos' meaning cold. It refers to a temperature of -20°C.

Today, cryosurgery can be used in orthopaedics, neurosurgery, ophthalmology, urology and in the ablation of accessory cardiac pathways. It still has an important role in the treatment of some cancers along with conditions that may become cancerous, and is also used to treat non-cancerous benign breast lumps and fibroadenomas.

It is still used today for treating Morton's neuroma, a non-cancerous abnormality of the nerve sheath and for treating parts of the brain that cause tremor in Parkinson's disease.