New Trends

In

Forensic Medicine

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Virtopsy "Virtual Autopsy"

- Autopsy is a corner stone of forensic medicine.
- Traditional Autopsy is invasive technique .
- It is a postmortem exam of the victim by incision.
- Now , there is an alternative approach of postmortem examination by advanced radiographic techniques (CT and MRI).
- This approach is called a virtual or bloodless autopsy.
- The virtual autopsy is one of the greatest advances in forensic medicine in the past years.
- It is non-invasive method.

- It is a combination of many topics under one scientific umbrella such as forensic Medicine, Pathology, Radiology and Physics.
- We can examine victims remotely in three seconds using CT scanner and keep a permanent record of wounds for a long time after decomposition of victim .
- We can detect hidden clues .
- We can detect new information about fatal diseases which are difficult to discover in traditional autopsy.
- We can do the virtual autopsy many times .

- We can make the skin completely transparent.
- We can examine muscles ,bones and organs for the cause and manner of death.
- We can navigate inside the body layer by layer in microscopic detail.
- We can use a virtual knife to take cross sections of body.
- It help us to understand diseases such as Alzheimer's and multiple sclerosis.

- The virtual autopsy table is a multi-touch screen to explore human body layer by layer using the high resolution MRI scan.
- It is based on a continuous interaction between the forensic pathologist and the radiologist .
- It is also used to educate medical students about human anatomy without the need for cadavers.
- It is used also for surgical planning.
- Medical teams can decide on the best surgical strategy for any surgical case before any operation.

Advantage of Virtual Autopsy

- It is time saving
- It respects the cadaver because the body remains are intact avoiding objections by family members.
- It provides additional analysis.
- It provides better view of fatal injuries.
- It determines the cause of the death of a bad putrefied dead bodies.

The Virtual Autopsy Table.avi

Virtual autopsies.avi

Virtual autopsy.avi

Forensic Facial Reconstruction

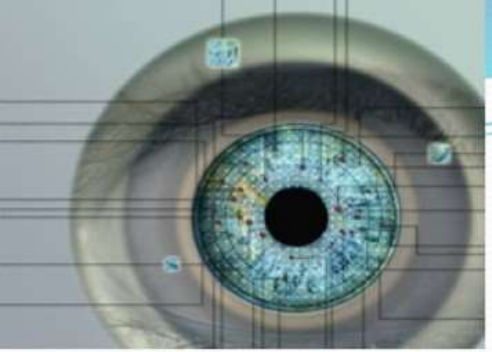
- Facial reconstruction is art and investigating tool.
- It is the process of recreating the face of unknown individual.
- It is a method for identification of skeleton of unknown victim after failure of traditional means of identification.
- Facial reconstruction gives the chance to reform face of the victim by two techniques (Two dimensions or Three dimensions reconstructions).
- It is based on ante mortem photographs and skull from skeletal remains or x ray of skull.
- Three dimensional print of skull can be performed from CT scan for a duplicate copy of the skull and mandible.

- Determination of shape of particular face depends on determination of tissue depth markers of face of unknown by applying clay to a human skull and glass eyes.
- Determination of proper tissue depth depends on race, sex and age.
- These information provided by the Forensic Anthropologist and other professionals according to geographic location of the deceased person.
- Reconstruction is not a complete image of the person, but it is an accurate representation.
- This technique had a high success rate.
- This method has been tried and proved over the years.

how its made s8 ep10- forensic facial reconstruction.avi

Advances of Biometric Tools

- Individual identification is still the most challenging problem in forensic field.
- Biometric techniques are used in identification.
- Identification of the victim can result from comparison of information collected during a forensic examination with information of data base such as fingerprints.
- Fingerprint is the oldest biometric technique.
- DNA print is the last modern biometric technique.
- In some cases, fingerprint is not available or mutilated.
- Now , Other forms of prints are also available such as retinal print, iris print, ear print, lip print and knee print which are used as forensic tools of identification.



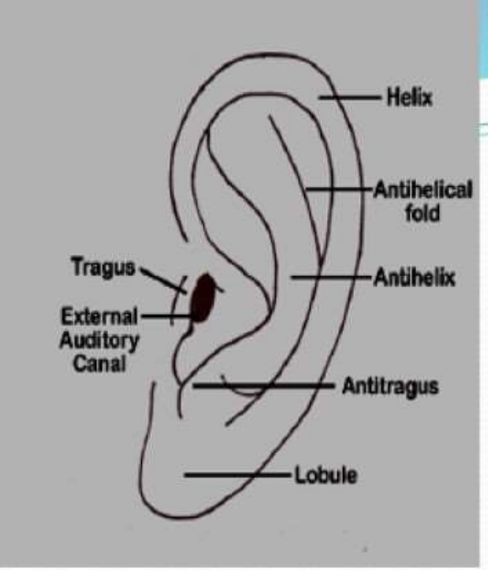
Retinal Scan

- It is one of the biometric methods using the eye for personal identification.
- The true target for this scan is the capillary pattern in the retina. The process depends on generation of retinal image using a light source.
- These capillaries absorb light and can be seen with illumination.
- Retinal scan requires close contact of user and scanner (1cm) without movement of the eye.
- The subject must focus on a little green light and avoid blinking.

- A low light is then transmitted through the eye and the reflected image of the retinal capillary pattern is recorded by the computer.
- An initial scan takes a minimum of five scans and lasts approximately 45 seconds .
- Scan is a map of the retina and used to identify a match from the formats encoded in the scanner's software.
- Retinal patterns are fixed during a person's life.
- It was changed in case of diabetes, glaucoma, retinal degenerative disorders or cataracts.
- Retinal scans are nearly 100% accurate.

Iris Scan

- The colored part of the eye appears to be as fingerprint.
- The main advantage of the iris scan is the ability to perform it from a distance of up to three feet.
- It has a short time (20 seconds) with identification requiring only two seconds.
- Glasses and contact lenses do not interrupt with the scanning process and identification.
- Retinal and iris scans offer high accuracy and the primary users of retinal scans are military and government facilities, such as CIA and NASA.

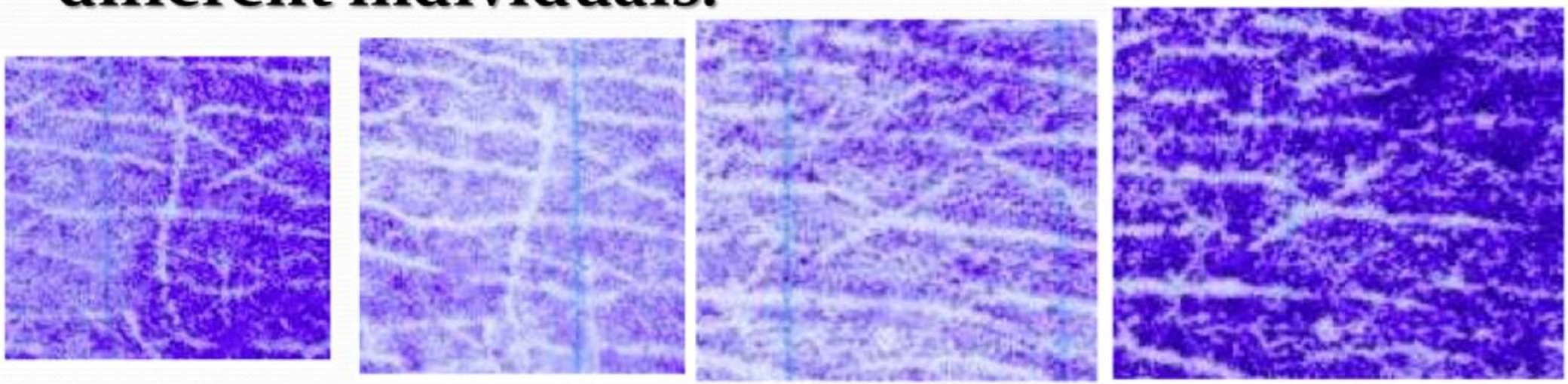


Ear Print

- Anatomy of ear is unique to each individual and different.
- The external ear has been used as a means of identification.
- Ear print is made by pressing the ear to any surface. This pressure can be slight or great.
- Ear print found in any place such as door, wall, window where the person pressed his ear to listen .

Knee Print

- It is a useful forensic identification tool.
- knee print is characteristic ridges and grooves of skin of anterior surface of knee joint (patellar surface).
- It has a considerable degree of variability among different individuals.



shape of grooves-representing lines crossing down the lines

Lip Print

- The study of lip print is called cheiloscopy.
- It is similar to fingerprint.
- The external surface of lip has many elevations and depressions forming a characteristic pattern called lip print
- It is a several fissures and some other criss-cross lines .
- These fissures and criss-cross lines are different in different people and form a very good basis of identification.

Thank you