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UNDERGRADUATE SECTION

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EXHUMATION - MEDICAL AND LEGAL ASPECTS

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Definition and general aspects

The word Exhumation comes from Latin words *ex* meaning "out of", and *humus*, meaning "ground". Thus the word literally means "out of ground". It means *authorized* digging out the coffin of a dead person from his grave, in order to establish his cause of death, or to decide upon some other relevant fact, such as the person's identity.

Figrue 1: An exhumation under progress. A board of forensic specialists is supervising the operations. [Click picture to enlarge]



Exhumation is rarely done in India, because in our country, the bodies are disposed off by cremation (burning). Only certain communities bury their dead, and exhumation is relevant only for them. It becomes necessary if at the time of death, there were no suspicions and the body was buried without a post-mortem. Later on fresh facts may come to light, showing some foul play. So a post-mortem examination becomes necessary to establish his cause of death. Exhumation also becomes necessary, when the first post-mortem was inadequate, and it is thought that a second post-mortem may bring some more facts to light. This basically means exhumation combined with doing a second post-mortem.

Exhumation vs. retrieval of a clandestinely buried body

Exhumation must be differentiated clearly from the retrieval of a body clandenstinely buried body by the criminals. In the latter case, the body was never legally buried (or inhumed) in the first place. The person was killed by a criminal or a group of criminals and his body was secretly buried in order to destroy evidence of murder. Retrieval of such a body is ***NOT*** exhumation. It is simply unearthing of the body buried illegally and in a criminal fashion by some criminal elements.

The term exhumation is applied only when a proper inhumation (ritual burial of the body in a legal and legitimate fashion) was done in the first place. This difference is not merely academic; it has important legal repercussions. In India, while a proper exhumation can only be done a magistrate under section 176 of Criminal Procedure Code (Cr.P.C.), retrieval of an illegally buried body can be done even by the police under section 174 of Cr.P.C.

Reasons for exhumation

Criminal

1. Establishing the cause of his death

2. Retrieving some vital object which may throw more light on the case, such as retrieving the bullet from the dead body, if the person was killed by a firearm.

Figrue 2: Pulling the casket out of grave. [Click picture to enlarge]



Civil

1. Identification of the deceased for various purposes, including burial of the wrong body inadvertently or by fraud, settling of inheritance, etc.
2. For historical reasons:
    1. Looking at nutrition and disease in previous generations[1].
    2. For re-establishing the cause of death [e.g. The coffin of Zachary Talyor (1784-1850), 12th President of the United States was exhumed in order to re-establish his cause of death for historical reasons. President Taylor died on July 9, 1850, apparently of gastrointestinal infection. He was 66. It is known that five days prior to his death, he consumed large amounts of iced milk and cherries. At the time of his death, his symptoms were consistent with death from natural causes, so no one doubted his cause of death.

       It is well known that although he was a slave holder himself, he was sympathetic to the arguments of abolitionists and opposed the admission of new states as slave states. His death would have been welcomed by the pro-slavery faction. Was he deliberately poisoned by his enemies through the iced milk which he consumed? If yes, then history would need to be rewritten!

       In 1991, 141 years after his death, several historians and scientists petitioned the coroner of Jefferson County, Kentucky, where his remains are interred. On June 17, 1991, his body was exhumed and very sensitive tests done. Arsenic found in his remains was consistent with normal levels. So it does appear now that President Taylor was not murdered[2].].
3. When the site of a graveyard is moved e.g. for redevelopment.
4. When the relatives wish to relocate the grave for some reason [Frank Lloyd Wright (1867-1959), an architectural genius, who created such buildings as the Guggenhein Museum in New York and the Imperial Hotel in Tokyo, was initially buried alongside many of his ancestors, in Spring Green, Wisconsin. Twenty six years after his burial, when his third wife Olgivanna Milanov died in Scottsdale, Arizona, his remains were exhumed, cremated, and sent to Scottsdale in accordance with her wishes. This created an uproar among Wright's family and one of his sons even called it "an act of vandalism"! Wright's eldest granddaughter said that "the heartland is where is spirit is, where the ideas were formulated and where the genius was born". The metal marker at Wright's original grave site in Spring Green still stands, but the grave is empty. His remains now lie buried in Taliesin West near Scottsdale, Arizona[3]. For a picture of his tombstone, please click here.]

Unusual Reasons

[*This section was added much after the paper had been published online (for the sake of completeness). Readers may note that the reference used is from the year 2002*]

1. To test methods for preventing or slowing down the process of postmortem decay [U. Mobus and colleagues describe an usual case of exhumation, in which a young person "exhumed" a child's body involved in a road accident because he wanted to test methods for preventing or slowing down the process of postmortem decay.[4]. It can not however be considered a *true* case of exhumation, as it did not have a legal authority]

2. Exhumation for reburial (for emotional reasons) [During World War II, many innocent civilians were shot summarily or killed otherwise and then buried in mass graves without coffins and even without proper last rites. After the war was over, many such bodies were exhumed and reburied with proper rites. A. Keith mant mentions this fact in his classical paper on adipocere, because a number of these bodies were found to be converted into adipocere[8].]
3. Exhumation for reburial (posthumous pardon) [Timothy John Evans (20 November 1924 – 9 March 1950), a Welshman was hanged in the United Kingdom in 1950 for the murder of his infant daughter at 10 Rillington Place, London. An official inquiry conducted 16 years after Evans's hanging determined that his daughter had in fact been killed by his co-tenant, serial killer John Christie, and Evans was subsequently recommended and granted a posthumous pardon. His body was thereupon exhumed and reburied outside Pentonville Prison.]
4. To check an accused's story [When John Reginald Halliday Christie (8 April 1898 – 15 July 1953) was arrested on March 31, 1953 for the murder of six women, whose bodies were found in his house, his house was searched for more clues. A tobacco box was found, which contained some tufts of pubic hair. During his confession, Christie said that one of the tufts had been taken from the body of Beryl Evans, a 19 year old woman whose body was recovered from his house in December 1949, but for whose murder, her husband Timothy Evans had already been hanged. Now Christie seemed to be saying that he had murdered Beryl and had taken pubic hair from her body after killing her (He was looking for insanity defence and reasoned that if he could prove he killed more people than he actually did, he would be considered a mad man by the jury. So quite paradoxically instead of proving his innocence, his intention was to prove he had done more killings than he actually had).To confirm Christie's story, Beryl's body was exhumed, and a tuft of her pubic hair removed. Dr. Keith Simpson compared the two samples and came to the conclusion that the hair did not match. Thus Christie was speaking a lie.]
5. At the request of the family to recover an object placed inadvertently with the remains.

Who authorizes exhumation?

Figrue 3: Collecting soil from beneath the casket, after it has been taken out. [Click picture to enlarge]



The body can be exhumed only upon the written order from the First Class Magistrate (judicial or executive). Coroner system does not exist in India, but where coroner system exists, coroners can usually order exhumation. In India, police ***CAN NOT*** order exhumation. In India it is a usual practice for magistrates to constitute a board comprising of three different forensic pathologists from three different medical institutions. The board jointly supervises exhumations (figure 1) and conducts postmortem examination of remains. Although law does not specifically require the formation of such a board, it is usually done in order to send out a message to the aggrieved relatives that the postmortem was done in a free and fair manner with no pressure from any quarters, and also that no inadvertent mistakes could be made (which could perhaps be there if there were only a single doctor).

Procedure

Time

Exhumation is usually done in broad daylight. For this reason, the exhumation team should reach the site of burial (graveyard) in the early morning hours.

Who should be present

The magistrate or the coroner ordering the exhumation and the doctor should be present at the site.

Identification of the grave

The grave is identified properly, with the help of relatives and the official in charge of the graveyard.

Screening off the area

If there are too many curious spectators, the area should be screened off. Professional diggers are then requested to remove soil from the grave. When the coffin becomes visible, strong ropes are passed beneath the coffin, and it is lifted up (figure 2).

Figrue 4: Eight jars with soil from top, bottom, front, back, left and right side of the casket. Two jars contain soil from about 25 yards away from the grave. [Click picture to enlarge]



Collection of soil

Soil from above, below, and from all four sides of the coffin should be collected and preserved in separate glass jars, with identification tags. In addition, at least two samples must be taken from some distance - say around 25 to 30 yards from the grave (figures 3, 4). This is very necessary in some poisoning cases. One example would make the situation clear. If the person is alleged to have been killed by administration of arsenic, and arsenic is found in the body after exhumation, the defense may take the plea that the arsenic found in the body leached in the body from the surrounding soil. It is well known that soil may contain traces of arsenic. An examination of soil recovered from around the grave would reveal whether there was arsenic in the surrounding soil or not. Even if arsenic is present in the surrounding soil, it does not necessarily mean that the defense would become very strong. If the concentration of arsenic found in the body is ***more*** than that found in the soil, it clearly indicates that arsenic could not have passively diffused from the soil to the body.

Examination-in-situ

It is customary to open the lid of the coffin once it is brought out of the grave (figure 5). It not only allows foul gases to escape in open air (rather than be released in the mortuary later), but also enables the pathologist to make a quick examination of the remains. When the coffin is opened, the

medical officer in-charge should first of all examine the body in situ, and preferably take photographs. Bones may be friable, and may break during subsequent handling, so in situ examination is often quite helpful.

Post-mortem

After an in situ examination is done, the body is transferred to the mortuary for a post-mortem. Here the post-mortem is done as in any other case (figure 6). If there are worms or other insects over the body, it might be tempting to sprinkle insecticides over the body, but it should never be done, as it might interfere later with the determination of poison in the body. If the smell is too offensive, it is advisable to wear a gauze mask dipped in a solution of potassium permanganate. Samples of viscera should be taken for detection of poisons. Many poisons, such as metallic poisons remain in the body for several years. Hair, nails and bones such as femur may also reveal metallic poisons like arsenic.

Exhumed Bones

If only bones are recovered in exhumation (as in very old graves), the bones must be boiled before examination. Maceration by this process may reveal diagnosis not available otherwise by ordinary examination. Maceration by this process is recommended not only in medicolegal autopsies, but also in historical material.

Figrue 5: Lid of the casket is opened to let gases escape and to make a preliminary examination. [Click picture to enlarge]



[Ullrich von Hutten (a knight, revolutionary and poet, 1488-1523) was thought to have suffered from syphilis of the skeletal system at the time of his death. He was duly buried with everybody thinking he was suffering from this disease. In 20th century his grave was exhumed for historical

reasons, and the pathologist E.Uehlinger was given the task to study the bones. He boiled the bones first and came to the conclusion that the unfortunate rebel was suffering from *polyostotic sclerosing osteomyelitis*, and not syphilis[5]. This diagnosis could be arrived at only because the bones were properly macerated before studying.]

Time limit upto which exhumation may be ordered

In India, there is no time limit for ordering of the exhumation, but many western countries have well-defined time limit up to which exhumation can be done. For instance, in France the time limit is 10 years, and in Germany the time limit is 30 years. Thus in France, if in the 11th year (say) of death, some relevant facts are found which reveal foul play, even then the body can not be exhumed.

Exhumation of Animals

Rarely animals have been exhumed in murder investigation of human beings. This unusual possibility must be kept in mind, when investigating a case of murder.

[Ethel Lillie Major, a 24 year old cantankerous woman, had an illegitimate daughter Auriel. Ethel's parents passed her off as Ethel's sister and married Ethel to Arthur Major in 1918. In 1919, the couple had their own child. Initially the couple lived with Ethel's parents, but in 1929, the couple moved into their own house at Kirkby-on-Bain.

Around 1934, differences began to crop up between the couple. Arthur found out the truth about Ethel's "sister" Auriel, and began an affair with another woman, a neighbor, Mrs. Rose Kettleborough. Ethel claimed to have found two letters written by Rose to her husband. She showed these letters to her doctor with the comment: 'A man like him is not fit to live, and I will do him in'.

Figrue 6: Remains lying in the mortuary just prior to postmortem examination. [Click picture to enlarge]



On 22 May 1934, Arthur Major ate some corned beef and was soon taken ill. Ethel had access to strychnine, which her father, an ex-gamekeeper, kept with him to eliminate vermin. A key was found in Ethel's purse that could open a box containing a bottle of strychnine. Ethel's father vaguely

remembered having misplaced his spare keys some years before. The corned beef, which seemed to have started Arthur's symptoms was proved to have been bought by the couple's 15 year old son - on his mother's instructions.

While eating, Arthur had complained about the bad taste of corned beef and had thrown some of it to his neighbor's dog, who quickly lapped it up and died on 23 May after suffering muscular spasms. Arthur died on 24 May 1934 at 10.40 pm after suffering from severe convulsions and spasms. His official cause of death was given as *Status epilepticus*.

An anonymous letter sent on 26 May 1934, to the investigating police officer, Inspector Dodson of the Horncastle force implicated Ethel in the death. The dog's body was exhumed (a rare case where an animal's body was exhumed in death investigation of a human being[6]), and strychnine found in it (by Dr. Roche Lynch, distinguished analyst to the Home Office). Arthur's funeral was immediately halted and a post-mortem examination ordered. Strychnine was found in his body too.

Chief-Inspector (later Commander) Hugh Young was placed in overall charge of the case. When he went to interview Ethel, she exclaimed,"I've never had any strychnine poison". When Young reminded her, that he never mentioned strychnine, she immediately tried to correct matters,"Oh, I'm sorry. I must have made a mistake[7]".

When the case came up for trial at Lincoln Assizes, Ethel was defended by Mr. Normal (later Lord) Birkett. However Ethel was found guilty and executed at Hull Prison on 19 December 1934.]

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