

# THE MEDICO-LEGAL POST-MORTEM IN INDIA

Second Edition

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# THE MEDICO-LEGAL POST-MORTEM IN INDIA

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WITH A FOREWORD BY

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## FOREWORD

IN this book Captain Lambert sets out to give practical instruction in the performance of post-mortem examinations in India. In addition to describing the technique of such examinations in detail he gives much useful information on the identification of the dead body and a careful explanation of the various causes of death from violence.

There is no distracting discussion in the book and the whole subject-matter has been treated in a concise and dogmatic way, which has certain advantages.

The book should take its place as a useful guide in the Post-Mortem Theatre and the Practitioner who has to perform Autopsies will find in it a wealth of practical information.

SYDNEY SMITH.

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## **PREFACE TO THE SECOND EDITION**

IN a practical handbook written as simply and as briefly as possible few changes can be made without changing the meaning. Fundamentals do not alter much, and to change the meaning would be to introduce errors. Minor changes I have made, but in essentials the book remains what it was, a short practical guide. I have resisted all temptations to enlarge it.

To the many friends, reviewers, and critics who have helped me with suggestions I return sincere thanks.

D.P.L.

## PREFACE TO THE FIRST EDITION

THIS book is written in the hope that it will find a place on the mortuary shelf. A clean copy in a library will have failed in its main purpose ; though students may find it a useful supplement to one of the larger text-books. The volume is short, and therefore dogmatic. It contains little or no theory, but devotes itself to describing what to look for and how to look for it. The section on technique is orthodox, and it is pleasant to record my indebtedness to Dr. W. G. Barnard's pamphlet for several useful directions. Most of the rest of the book is founded on orthodox teaching too, Edinburgh teaching mainly, but where practical experience has conflicted with text-book opinions I have cheerfully discarded the latter. I am glad of the opportunity to thank Professor Sydney Smith for allowing me to quote a paragraph from his well-known text-book, and I must thank Colonel H. C. Buckley, I.M.S., now Surgeon-General of Bombay, for many useful suggestions. Further thanks are due to the Inspector-General of civil hospitals, United Provinces, for permission to publish the book, and finally to Messrs. J. and A. Churchill Ltd. for their courteous assistance in its production.

D. P. LAMBERT.

# THE MEDICO-LEGAL POST-MORTEM IN INDIA

## TECHNIQUE

THE technique of the medico-legal post-mortem is the same as that of the pathological post-mortem, but the medico-legal examiner must concern himself with signs and appearances that the pathologist can afford to overlook. There is no need to emphasise the need for care in conducting the examination. A post-mortem carelessly performed is scientifically and legally useless : a mutilation of the dead, not a post-mortem examination. The golden rules are three : " Look before you cut," " never cut unless you know exactly what you are cutting," and " weigh and measure everything that can be weighed and measured."

The examination begins with the clothing. Over-zealous post-mortem room attendants often strip the body before the pathologist arrives. The practice should be strictly forbidden. The kind and quality of the garments having been seen, they should be examined for stains, of dust, of blood, of grease, or of any kind whatsoever ; cuts and tears should be looked for, and their correspondence or want of correspondence with injuries on the body should be noted.

Having examined the clothing, the surface of the body



is closely scrutinised. All details which can establish or confirm identity are accurately recorded ; the natural orifices of the body are inspected, and all wounds, however trivial, are most particularly to be examined and described. Facts which help to establish the time of death, hypostasis, rigor mortis and putrefaction are likewise noted.

The order in which the internal examination is carried out depends on the condition of the body. The most injured part should be examined first. If no part appears more injured than any other, and if there is no guidance in the police report accompanying the body, the examination should be made from above downwards. Some authorities believe that the head should always be opened first. Whilst not agreeing with this general dictum, it is as well to conform to it when possible, otherwise the authorities just mentioned may be quoted against one in cross-examination.

The scalp is incised across the vertex from mastoid process to mastoid process, and the flaps are turned down to back and to front. Any hæmorrhage or bruising of the scalp should be noted, and the exposed skull examined for fractures. The skull is then sawn through all round just above the level of the ears. In opening the skull the saw only is to be employed. In the medico-legal post-mortem the use of the chisel is definitely forbidden ; it may produce fractures where none were before, or extend existing ones. Care should be used in sawing, and the dura mater should not be damaged, still less the underlying brain. The calvarium being freed and removed, the dura is inspected, and the superior longitudinal sinus

is opened and investigated. The dura is now cut round close to the line of the saw cut, the anterior attachments of the falx cerebri are severed, and the upper part of the dura is stripped off.

The brain and its finer membranes are now open to inspection. This concluded, the frontal lobes are gently raised up. The olfactory nerves are detached from the base of the skull, and the optic nerves and the rest of the visible cranial nerves are severed as near to the dura as possible. The internal carotid artery is cut across, and the stalk of the pituitary body. The tentorium cerebelli is now in view, and is cut through all along its attachment to the temporal bone. The subtentorial part of the brain is now withdrawn, cutting the remaining cranial nerves and the vertebral arteries, and cutting across the medulla as low down as possible. In all manipulations, and especially where traction has to be employed, the greatest gentleness must be used. The brain is readily damaged by rough handling.

The base of the brain should be examined first, with its membranes, the sub-arachnoid spaces, and its arteries, especially the arteries of the circle of Willis. The medulla and pons are exposed by serial transverse sections, which should not quite cut through the tissue. The brain is now placed on its base, and parallel coronal sections are made through both cerebral hemispheres beginning at the frontal poles and working towards the occiput. As before, the sections should stop short of being complete. The precise manner of making the sections is not important as long as the anatomy of the brain is

adequately displayed. The internal capsule, the ventricles and the basal ganglia must invariably be reported on. The cerebellum remains to be examined, a vertical cut exposes the vermis, and radiating sections display the hemispheres and the cerebellar nuclei. Where there are wounds of the brain this routine should be modified. Successive sections parallel to the wounded surface should be made till the full depth of the wound is revealed. Wounds of the brain must never be explored with the probe. Brain tissue is so soft that even the gentlest manipulations are liable to extend the original wound.

The base of the skull is now to be seen. The venous sinuses are first examined, then the dura is stripped off. Considerable force is needed, and it is most conveniently applied by gripping the dura with artery forceps, the stronger the better. When the dura is stripped the surface of the bone is examined, particular search being made for fractures. The roof of the sella turcica is incised, the posterior clinoid processes are chiselled off and the pituitary body is withdrawn for inspection. The middle ear is then exposed by gouge and chisel. The landmark for this operation is the internal auditory meatus. (Suitable gouges and chisels are not included in the standard set of post-mortem instruments. They may most easily and cheaply be acquired by securing condemned mastoid instruments from the local hospital. These, though no longer suitable for the more exacting requirements of surgery, can serve very usefully in the post-mortem room. Old intestinal clamps, artery forceps and tissue forceps can be similarly obtained, and most usefully supplement the standard set of instruments.) The

mastoid air cells are exposed in the same operation. If there is any indication to do so, the other sinuses of the skull can be chiselled open, and in all cases of intracranial sepsis they should be opened ; but this is not generally necessary.

To-expose the neck Barnard's V-shaped incision is the best. It begins at the tip of the mastoid process, follows the posterior border of the sternomastoid muscle to the root of the neck, and continues to the mid-line of the chest about the level of the fourth rib, where it joins a similar incision made on the opposite side. From the meeting point of these two incisions a single cut continues to the pubis, avoiding the navel on the left side. The V-shaped piece of skin enclosed by the incisions in the neck is reflected upwards along with the superficial tissues and the platysma until the jaw is reached.

Before continuing the dissection of the neck the body cavities are laid open. Unless these are inspected first doubt may arise whether blood or pus seen therein was originally present or arrived there during the section. The superficial coverings of the chest and of the abdomen are reflected to either side. In performing these reflections it keeps the gloves of the operator clean, and free from slippery fat and blood, if tissue forceps are clipped to the edges of the flaps and the necessary manipulations effected with their help ; dissecting forceps can be used instead, but tire the fingers more. They should be reserved for situations where more delicate manipulations are required. The breasts have been reflected along with the flaps, and in the female should be incised from the inner aspect, special attention being paid to any hard

areas. The peritoneum is carefully opened in the mid-line. The recti abdominis muscles are cut through just above their attachments to the pubis, the subcutaneous tissues and muscles are freed from the ribs, and thus the abdomen is fully displayed. In the absence of any abnormality of viscera or of contents which would divert attention to the abdominal cavity, the chest is now opened, the abdomen being dealt with later. The rib cartilages are cut through close to the ends of the ribs. To avoid damaging the viscera beneath, the blade of the cartilage knife should be held at such an angle that it strikes a second rib before it has completely severed the one in front. In elderly subjects, when the rib cartilages are ossified the knife will not be sufficient, or would be blunted too much, and rib cutters will be needed. The ribs are cut from below upwards, and before cutting the cartilage of the first rib and disarticulating the sternoclavicular joint the sternum should be raised and the pleuræ inspected. Large vessels underlie the first rib and the sternoclavicular joint, and if they are cut the bleeding may obscure or obliterate earlier pathological changes. When the pleuræ have been seen the first rib is cut and the sternum disarticulated at the sternoclavicular joints. The direction in which the end of the clavicle looks, downwards and inwards, should be borne in mind during this operation. The sternum is now freed from the mediastinum and withdrawn. Any difficulty in removal is a strong sign of pathological changes underneath. The structures of the neck in continuity with those of the thorax are now ready to be removed.

The tongue is freed by passing a sharp knife through the soft tissues close to the inner side of the jaw ; being freed, it is drawn forwards. The pharynx is cut through just above the soft palate, and by gentle traction and a few touches of the knife the whole of the viscera of the neck are detached from the vertebræ down to the level of the subclavian arteries. Before proceeding further the pericardium is opened, inspected and cut away from the diaphragm. If pleural adhesions are present they are gently broken down so that the lungs are attached at the hilum only. If the adhesions are strong and extensive it may be easier to strip the pleura from the chest wall than to separate the layers in the usual way. This done, the subclavian arteries are cut across and the stripping down of the structures of the neck is continued. The thoracic organs strip along with them in their turn. The lower end of the œsophagus is now tied, or more conveniently, as Barnard suggests, is clipped with forceps ; being secured, it is cut across above the clamp. The great vessels are cut at the same level, and with the division of a few light attachments the preparation is free and can be withdrawn to be examined in detail.

The pericardium is freely explored. Before removing the heart from the other thoracic organs the pulmonary artery is opened, and inspection made of the blood or clot contained in it. Here particularly it is important to distinguish ante-mortem from post-mortem clots. The former are firmer, and uniformly coloured. They can sometimes be peeled off in layers. They are firmly adherent, or if not, will show an obvious broken surface. The surface of the vessel to which they adhere is

roughened, though if they have been detached as emboli no roughening need be seen at their new place of lodgment. Post-mortem clots have the opposite qualities. When the pulmonary artery has been examined the great vessels are cut through about an inch from the heart, and the organ is removed from the rest of the preparation. The examination of the heart can be made in many ways. Provided that the heart muscle, the coronary arteries, the four chambers, and the valves are adequately displayed it matters little which method is followed. It is convenient and logical to begin with the right auricle and follow the course of the blood. The right auricle is opened by an incision joining the orifices of the two venæ cavæ. The tricuspid valve and the auricular appendage are examined. The latter may require to be opened up by a secondary incision. The right ventricle is then opened by a vertical incision  $\frac{3}{4}$  inch to the right of the interventricular septum. The descending branch of the left coronary artery conveniently indicates this structure. The tricuspid valve is seen from the ventricular side. The pulmonary valve is also inspected, and tested to see if it will hold water without leaking. The incision is then carried freely up into the pulmonary artery and the whole of the ventricular cavity is exposed. The left auricle is opened by an incision joining the orifices of the upper right and the lower left pulmonary veins. The mitral valve and the auricular appendage are seen. The left ventricle is incised to the left of the septum. The mitral valve is examined from below and the aortic valve is submitted to the water test. The incision is then extended into the aorta and the ventricle is freely displayed. The state of the aorta is

carefully investigated, particularly round the orifices of the coronary arteries. These vessels are followed to their last branches by making serial transverse cuts at short intervals. Coronary artery scissors do the work more quickly but may displace clots, and after their use it is difficult to gauge the calibre of the vessel. Throughout the whole examination of the heart close attention should be given to the state of the myocardium.

The preparation is now laid on its anterior side. The œsophagus is laid open with scissors and examined. This done, the larynx is similarly opened and the cut is carried down the trachea and into the main bronchi. The lungs are now severed at the hilum and laid aside. The tongue, tonsils and thyroid gland are all examined. The tongue should be investigated by serial longitudinal cuts, and in the examination of the thyroid gland the parathyroid glands should not be overlooked. The remainder of the aorta with its main branches is now opened and examined. Logically this dissection ought to follow the examination of the heart, but in practice it is more conveniently done here.

The lungs are incised from apex to base along their posterior borders. This is most conveniently done if the left lung is placed with its apex pointing away from the examiner, and the right lung with its apex pointing towards him. From the main incisions secondary incisions are made, displaying all parts of the lung.

The examination of the abdominal viscera can now be proceeded with.

The small intestine is cut between clamps at the



duodenojejunal junction, and is cut from its mesentery along all its length. This cut should be made as close to the bowel as possible. The cæcum, with the appendix, and the large intestine are removed in continuity with the small intestine and finally cut between clamps just above the rectum. The small gut is opened along its attachment to the mesentery, and the large gut along one of the tæniæ. Particular search must be made for parasites, especially hook-worm.

The liver, gall-bladder and bile passages, duodenum, pancreas, stomach and spleen are now removed in one preparation. Of this preparation the spleen is not a logical part, and it may be removed separately, but its inclusion makes the removal of the other organs easier. First the diaphragm is severed from its attachments all round. Unless this is thoroughly done the subsequent manœuvres are greatly hampered. The spleen is then pulled forward and stripped from the posterior wall of the abdomen. This pulls with it the fundus of the stomach and the tail of the pancreas ; and these organs in turn are stripped towards the middle line. The liver is similarly freed on the right side. In removing the liver care should be taken not to damage the right suprarenal gland which lies in the angle between the inferior vena cava and the posterior surface of the liver and often adheres to these structures. Vascular and other last attachments are now cut through, and the preparation is removed for examination.

The stomach is clamped at the pylorus, and the duodenum is opened along its convex border. The bile papilla is identified and gentle pressure is exerted on the