

REVIEW PAPER

Conventional Methods of Incision and The Cosmetic Autopsy Incision : Its Advantages

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ABSTRACT

The three conventional methods of incision have few drawbacks especially when we have to detect any injury in the back of the body. Without any colour changes in the skin externally or in cases of burn where any colour change in skin cannot be determined, there may be hidden injuries on the back, which can be thoroughly visualized by using the fourth incision, i. e., the cosmetic autopsy incision.

One of the advantages while using the cosmetic autopsy incision is that the long and prominent stitch mark in front of the body is not there in this incision.

Keyword: Autopsy, Incision, Injury, Cosmetic Autopsy Incision

INTRODUCTION

Medico-legal autopsy examination is a special type of examination of a dead body to find out the cause and nature of death examining all the body parts, organs with opening of all the body cavities to corroborate with the evidences of eyewitnesses as per laws of the land towards administration of justice and prosecution of guilty.¹ For any sudden, suspicious and unnatural death, medico-legal autopsy is a must. But, the facilities and necessities for doing such investigation are not satisfactory in our set up till date. So, we must be cautious in selecting an incision; it should be such that, it shows all the details of whole circumference of the body along with all the body cavities. When we use the conventional methods of incision, the posterior portion of body is not visualized, which can be visualized thoroughly if we use the fourth or cosmetic autopsy incision.

Although consent from guardian is not necessary for performing medico-legal autopsy, we the forensic people often have to deal with the agony of the relatives of the deceased in the autopsy hall. Most of the time, the relatives if given a chance, refuse for autopsy of their near and dear ones, because of the look after the procedure with a long stitch mark in front. But, we cannot restrict ourselves just to satisfy the relatives of the deceased since our foremost duty is to help the judiciary in disbursement of justice. So, we should adopt a mean that will not only help the law enforcing agencies but also satisfy the relatives of the deceased. In this regard the fourth incision is the only way out by which we can provide maximum possible information in regards of injury to the law enforcing agencies, and at the same time satisfy

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the marooned relatives as the stitch marks are not visible from the front and at the same time the whole circumference of the body is visualized which is not possible in other methods.

METHODS IN PRACTICE^{2, 3, 4, 5, 6, 7, 8}

Three different types of incisions conventionally used for opening the neck, thorax and abdomen are:

1. “I” Shaped Incision

It starts from symphysis menti and extends straight to symphysis pubis right or left to umbilicus.

Disadvantages of this incision is the prominent stitch mark in front of neck, thorax, abdomen and also the neck structures especially in the back of neck are not visualized.

2. “Y” Shaped Incision

Starts at a point close to the acromion process extending downwards below the breast and across to the xiphoid process in both sides, then from the xiphoid process, the incision is extended downwards to the symphysis pubis. Here, visualization of neck structure is very poor but in this incision the stitch mark in front of the neck is absent.

3. Modified “Y” Shaped Incision

Starts behind the user to midclavicular point bilaterally, then carried out over the clavicle to suprasternal notch and then a straight incision to symphysis pubis in midline. Disadvantage here is also the prominent stitch mark in front of neck and poor visualization of back of neck though exposure of the neck structure in front of neck and to some extent the side of neck is better.

DRAWBACKS OF THESE INCISIONS

- Hidden injuries of posterior aspect of body are not visualized in all these incisions for confirmation of any suspected injury on the back, separate incisions are to be made at places. But many a time it is very difficult to distinguish between postmortem staining and bruises and also for injuries inflicted just before death and in dark complexion persons.
- For examination of spinal cord, we have to make a separate incision on the back.
- In cases of burn it is impossible to detect a bruise or any injury in deeper tissues of the back of the body as the posterior aspect of body cannot be visualized and so there is every chance that we may miss some

important evidences of injuries on the back.

- In cases of death due to torture, in police custody or any suspicious death due to violence, it is not possible to examine the posterior aspect of the body with the conventional methods of incision. So, the chance of omitting injuries in the back become eminent.
- An important drawback is the seepage especially from the abdominal cavity as the cavity is closed in a single layer. We Indians always obey the religious rules and regulations. So, after taking the body from the mortuary when the close relatives prepare the body for last right, the seepage from the body imparts a negative impact on them.

THE FOURTH INCISION^{9, 10, 11, 12}

To overcome from all these drawbacks, we can use the fourth incision, i.e., the Cosmetic Autopsy Incision. By using this incision we can expose both the front as well as the posterior aspect of the body and at the same time hide the stitch marks in the front of the body.

STEPS OF THE INCISION

The process starts from the posterior aspect of the body.

A. To expose the posterior aspect of body:

1. Positioning of body: The body is placed in prone position with a wooden block under the shoulder, so that the neck is flexed anteriorly (**Figure 1**).

2. Incision on the back:

- As in the conventional method, an incision in the scalp is made from one mastoid process to the opposite mastoid process in coronal plane (**Figure 2**).
- From the mastoid process incision is extended along the posterior aspect of the sternocleidomastoid muscle and then through the posterior border of trapezius to the posterior aspect of acromion process bilaterally (**Figure 3**).
- Then a curved incision is made along the medial border of shoulder joint from the tip of the acromion up to the mid axillary line in the axilla; the same incision is repeated on the opposite side also.
- Then from the mid axillary point in the axilla the incision is extended in mid axillary line to iliac crest on both sides (**Figure 4**).



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

3. Reflection of posterior flap (Figure 5):

Now the posterior part of the scalp flap is reflected back upto the occiput and the anterior portion anteriorly upto the supraorbital ridges. The posterior flap is then reflected back making superficial strokes with the help of scalpel on the subcutaneous tissues and continued through the back of neck, chest and finally the back of abdomen upto the superior border of sacrum. By this way we can reflect the whole flap of skin from scalp upto the superior border of sacrum exposing the whole back of head, neck, chest and abdomen and thus can visualize the whole of back.

B. To expose the anterior aspect of body:

After proper inspection of whole of the back, the posterior flap of skin is reflected back.

1. Positioning of body (Figure 6): Now the body is turned

back to supine position with a wooden block under the shoulder so that the neck is in extended position.

2. Incision in the front:

- As in the posterior aspect, a curved incision is made from the acromion process along the medial border of shoulder in the front to the mid axillary line bilaterally (Figure 7).
- Another incision is made from the mid axillary line on iliac crest to symphysis pubis over the inguinal ligament bilaterally (Figure 8).

3. Reflexion of anterior flap:

Now the flap of the skin is reflected upward from the symphysis pubis up to the root of neck and then to the inferior margin of mandible bilaterally (Figure 9). While



Figure 7



Figure 8



Figure 9



Figure10



Figure 11



Figure 12

reflecting the anterior flap, care should be taken not to injure the rectus sheath as well as the neck structures. The whole of the anterior aspect of neck, chest and abdomen can be visualized and examined in this way.

C. Opening of abdominal cavity:

To open the abdominal cavity, a paramedian incision is made on rectus sheath with the help of a blunt or pointed scissors or enterotome, near the symphysis pubis, which is extended upward by keeping the index and middle finger as guard upto the xiphoid process (**Figure 10**).

D. Opening of thorax (**Figure 11**):

By cutting at the costocondral junction and then separating the sternoclavicular joint, the sternum is removed (**Figure11**).

Now, we can examine the whole of the thoracic and abdominal cavities after separating the diaphragm.

E. Closing of the incision:

- Abdomen is closed by stitching the rectus sheath (**Figure 12**).
- The sternum is replaced back to its position (**Figure 12**).
- The flaps of skin are replaced back.

- Stitching should be started from the incision over the inguinal ligament then bilateral mid axillary incision upto the axilla.
- Stitching is then continued along the medial border of shoulder in front on both sides. Body is then turned back and the stitch is continued through the medial border of shoulder on posterior aspect and then the posterior aspect of neck upto the mastoid process. Stitching the scalp incision closes scalp.

DISCUSSION

In conventional method, for detection of any hidden injury especially on the back, (**Figure 14, 15**) we have to make separate incisions at the places where we suspect injury; thereby causing disfigurement of the body which can be avoided by using the cosmetic Autopsy Incision.

In cases of burn where bruise detection is very difficult or impossible by external examination, we will surely miss the presence of any injury in conventional incisions. But as the whole circumference of the body is exposed in the cosmetic autopsy incision, we can readily opine about the presence or absence of any such injury.

Another advantage of this incision is that, stitches made in the body are not seen except the stitches of medial border of shoulder in the front (**Figure 13**). Taking care



Figure13



Figure 14

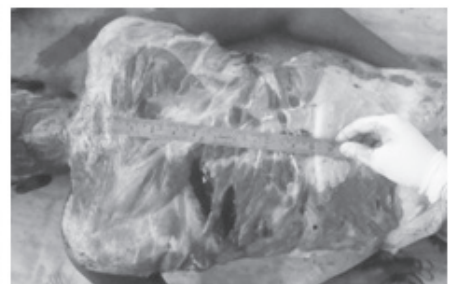


Figure 15

while stitching can minimize this. So, the appearance of the deceased after postmortem examination is not so depressing like the conventional methods with a long stitch in front of the whole body.

Now one of the important advantage of using this incision is that there is no chance of seepage from the abdomen which is closed in two layers, first by stitching the rectus and then the anterior flap. Care is to be taken while opening the peritoneal cavity so that the incision is made on the rectus muscle (paramedian incision) not in midline. In conventional methods, as the abdomen is closed in single layer, there is chance of seepage leading to embarrassment for the relatives of the deceased.

While using the conventional methods to expose the spinal cord in some cases, we have to make a separate incision. But if we use the fourth incision, it can be done while the body is in prone position after reflecting the skin flap.

With these benefits a drawback while using this incision is the “time factor”. We nearly have to spend twenty-five minutes of extra time; ten minutes for opening and about fifteen minutes while closing. But this extra twenty-five minutes is not a hurdle if we consider the advantages of the incision.

SUMMARY

The fourth incision is superior than the conventional incisions, because:-

1. Whole circumference of neck, chest and abdomen is visualized and so, very effective particularly in cases of death due to torture, burn or any cases where injuries in the back is suspected.
2. A stitch in front of body is not seen in this method.
3. No or minimal seepage from the cavities.
4. Separate incision for opening the spinal cord is not needed when required.

5. Disadvantage of the incision – 25 minutes more time is required for completion of the whole process.

REFERENCES

1. Karmakar RN. J.B. Mukharjee’s forensic medicine and toxicology. 3rd ed. Academic Publishers; 2007. p.198-233.
2. Vij Krishan. Text book of forensic medicine and toxicology. 5th ed. New Delhi: Elsevier; 2011. p. 17-23, 160-8.
3. Camps Francis E, Gradwohl legal medicine. 3rd ed. Bombay K.M. Varghese company; 1976. p. 70-77, 356-60
4. Dr. Laaksonen H, Dr. Parikh CK. Dissection of neck in medico legal postmortems in India. 1st ed. Bombay: Dr. CK Parikh medical publication; 1985. p. 42-43.
5. Dr. Parikh CK. Parikh’s text book of medical jurisprudence and toxicology. Bombay Medical centre; 1990. p. 93-104.
6. Dr. Reddy KSN. The essentials of forensic medicine and toxicology. 29th ed. Hyderabad: K. Suguna Devi; 2010. p. 91-111, 284-93.
7. Knight B, Forensic pathology. 3rd ed. London: Arnold; 1996. p. 16-30 312-24.
8. Mathiharan K, Patnaik Kamrit. Modi’s medical jurisprudence and toxicology. 23rd ed. Haryana: Lexis Nexis; 2009. p. 357-80, 629-42.
9. Patowary AJ. The fourth incision a cosmetic autopsy technique. The American Journal of Forensic Medicine and Pathology 2010; 31(1):37-41.
10. Patowary AJ. The fourth incision – a few modifications in the autopsy incision technique. The Journal of Indian Academy of Forensic Medicine 2010; 32(3):234-8.
11. Pillay VV. Text book of forensic medicine and toxicology 16th ed, Hyderabad, New Delhi, Paras medical publisher, 2011. p. 139-43, 225-35.
12. Patowary AJ, Mahanta Putul. Autopsy. In: Mahanta Putul, editor. Modern Text Book of Forensic Medicine and Toxicology. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2014. p. 205-210.