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A Study of Problems Faced During Embalming an Obese Cadaver

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Abstract: ***Embalmed cadavers are used in department of Anatomy for the teaching of structures of human body in dissection practical (Johnson JH 2002). Embalming is a process by which dead bodies are preserved by injecting an embalming solution in to the dead body which prevents the process of decomposition of the tissues and also prevents the spread of infections carried by the unembalmed bodies. It also helps to maintain the sanitation. Donated dead bodies for the research purpose in medical colleges are obese majority of times. For the same reason the embalmer should know the problems faced during the embalming of an obese cadaver. While embalming a obese cadaver we faced 100% difficulty in transportation of cadaver to embalming room, in observing superficial vein dilatation as embalming fluid pass through them, in knowing hardening of limb muscles at the end of embalming procedure and in knowing increase in the girth of abdomen, all are the signs to know the successive embalming progress (M.L. Ajmani 1998).***

Keywords: Anatomy, Cadaver, Dissection, Embalming and Obese.

1. Introduction

Anatomy, the study of the structure of the human body is one of the first, most basic and yet one of the most important subjects studied by medical students when they begin their medical career. Teaching and research in anatomy is mainly based on cadaver dissection. Embalmed cadavers are used in department of Anatomy for the teaching of structures of human body in dissection practical (Johnson JH 2002). Embalming is a process by which dead bodies are preserved by injecting an embalming solution in to the dead body which prevents the process of decomposition of the tissues. The preservation of dead bodies is for medical research or may be for funeral purpose. It also prevents the spread of infections carried by the unembalmed bodies. It also helps to maintain the sanitation. Few years before, the embalmed cadavers used in medical colleges for student dissection purpose were mostly obtained from unclaimed dead bodies from nearby police station. Unclaimed bodies in majority of the cases are not obese. Since few years due to awareness of body donation (Gorlick A- 2004) for research purpose, the medical colleges are getting donated bodies. Donated bodies in majority of cases are obese. Due to changes in life style, obesity is a seen in developed and even in developing countries (Larsson B, et al). Studies are not done on problem faced during the embalming of these obese cadavers. For the same reason, this study is done to know the problems faced during the embalming process of an obese cadaver.

2. Material and Methods

This study was done in the Department of Anatomy, S.Nijalingappa Medical College, Bagalkot and in the Department Of Anatomy DM-WIMS Meppadi, Kerala. Total 52 cadavers (aged from 32 to 78, 40 male & 12 Female) are embalmed. In the 52 cadaver 25 cadavers are unclaimed given by nearby police station, 27 cadavers were donated to the medical colleges for research purpose as per the wish of the dead person and their relatives. Consents were taken from relatives of the dead person.

Before embalming we measured the height, weight and body mass index of the cadaver to differentiate the obese and non-obese cadavers. In the 52 cadavers 21 cadavers (11 male & 10 female) were obese. All the persons died due to natural death and they were embalmed within 6 to 7 hours after death. If the cadavers were brought late in the evening for embalming, cadavers were stored in cold storage and the same were embalmed the following morning. All the bodies were embalmed by arterial method (common carotid artery and femoral artery) using gravity technique and also used standard embalming fluid (Raymond Coleman, Igor Kogan 1998). 42 were embalmed using carotid artery and the rest were embalmed using femoral artery. Difficulties faced during the embalming procedure are noted both in obese and non obese cadavers.

3. Results

Embalming procedures were done successfully in all the 52 cadavers. The problems were faced both in obese and non-obese cadavers, but the problems were more in obese cadavers when compared to non-obese cadavers. All the problems faced are tabulated in the table no 1.

While embalming an obese cadaver we faced 100% difficulty in transportation of cadaver to embalming room, in observing superficial vein dilatation as embalming fluid pass through them, in knowing hardening of limb muscles at the end of embalming procedure and in knowing increase in the girth of abdomen. All are the signs to know the successive embalming progress (M.L. Ajmani 1998).

Another difficulty (80.9%) which we faced while embalming an obese cadaver was, it was difficult to pass the cannula to irrigate the embalming fluid (may be due to atherosclerosis of vessel or small diameter of a vessel). This was 42.9% in non-obese cadavers. In non-obese cadaver we noticed larger diameter of vessels in compared to obese cadavers. Larger vessels helps embalmer to pass cannula easily during the embalming procedure.

Table 1: showing the problems faced during the embalming procedure done on obese and non-obese cadavers

Problems	Obese cadavers (21)				Non obese cadavers (31)			
	Male (11)	Female (10)	Total (21)	%	Male (29)	Female (02)	Total (19)	%
Difficulty in transportation of cadaver to embalming room (due to more weight)	11	10	21	100	00	00	00	00
Difficulty in dissecting superficial fascia of neck region	11	10	21	100	01	02	03	14.1
Difficulty in isolating the vessels due to enlarged lymph nodes which were adherence to vessels	01	03	04	19	04	02	06	28.6
Difficulty in passing the cannula through the femoral vessels	01	02	03	14.1	00	02	02	6.5
Difficulty in dissecting the carotid sheath	02	04	06	28.6	01	02	03	14.1
Difficulty in dissecting the femoral sheath	01	00	01	4.8	00	00	00	00
Difficulty during canula passage in to carotid artery (may be due to atherosclerosis of vessel or small diameter of a vessel)	08	09	17	80.9	05	04	09	42.9
Congenital abnormality in common carotid artery	00	00	00	00	00	00	00	00
Congenital abnormality in femoral artery.	01	00	01	4.8	00	00	00	00
Difficulty in observing superficial vein dilatation as embalming fluid pass through them (a sign to know embalming progress)	11	10	21	100	00	01	01	4.8
Difficulty in knowing hardening of limb muscles at the end of embalming procedure (a sign to know embalming progress)	11	10	21	100	02	00	02	9.5
Difficulty in knowing increase in the girth of abdomen (a sign to know embalming progress)	11	10	21	100	00	00	00	00

4. Discussion

Embalming is very economical technique to preserve the cadavers for undergraduate dissection in medical colleges. Due to opening of many medical colleges in India it is very difficult to get a cadaver for student dissection purpose in dept of Anatomy. The cadavers came to medical colleges as unclaimed or by donation should be embalmed at utmost care. In the obese cadaver it is very difficult to observe the signs of progress of embalming due to the more fat deposition in the superficial fascia all over the body. Atherosclerosis and other diseases affect many blood vessels in obese cadavers (Lapidus L et al). The embalming fluid will not reach the tissue where atherosclerosis of blood vessels is observed; due to these reasons obese cadavers are not completely embalmed in comparison to non obese cadavers.

For the better result of a embalming of an obese cadaver arterial embalming (Ikeda A et al 1993) procedure should be supplemented by

a) Cavity embalming, the suction of the internal fluids of the cadaver and the injection of embalming chemicals into body cavities, using an aspirator and trocar.
b) Hypodermic embalming, the injection of embalming chemicals under the skin as needed.
c) Surface embalming, which supplements the other methods, especially for visible, injured body parts.

5. Conclusion

Embalming is a technique to preserve the dead bodies to be used for research purpose or for funeral purpose. To preserve the obese cadaver the arterial embalming should be supplemented by cavity embalming, hypodermic embalming and surface embalming. Also this research forms a platform for other researches to be done for invention of better methods and machineries for the purpose of embalming. This study has very good future prospect in developing the advanced machineries by knowing the difficulties faced by the embalming team.

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