Anatomists have always been looking for a technique to preserve the biological specimens retaining its original features and which can be stored in open space without the ill effects of formalin preservation. One of the most important and potentially useful qualities of tissue plastination by silicone is that the microscopic structure remains intact of specimen and can be preserved almost indefinitely (Ravi and Bhat, 2011). Though histology of organs plastinated by Gunther’s method has already been done, no attempt has been made to study the histology of organs plastinated using environmental pollutants (plastic tea cups and thermocol). In this study, for the first time the indigenously plastinated organs were subjected for histological examination and compared with that of normal paraffin sections.

Fresh pig visceral organs (liver, kidney and spleen) were procured from slaughter house. The tissue samples were fixed in 5% formal saline, processed and paraffin blocks were prepared. The organs were subjected for indigenous method of plastination (Mutturaj, 2011). Before curing of the specimens, a small piece of tissue from plastinated specimens of liver, spleen and kidney were collected and directly embedded in the paraffin without deplastination and blocks were made. The blocks from the plastinated tissues and normal tissues were cut at 5 µ thickness and stained by routine hematoxylin and eosin-phloxine method (Culling, 1974).

The sections of spleen obtained by routine paraffin embedding technique revealed a very good differential staining with clarity in both nuclear and cytoplasmic details such as chromatin clumps, nuclei, cell boundary and vacuoles in the cytoplasm. However, shrinkage artifact induced loss of architecture with separation of cells was evident (Fig. 1).

The sections of spleen obtained by plastination embedding technique revealed compactness of the cellular structures with excellent maintenance of architecture of the tissue. There was no shrinkage induced artifacts, however the staining was only fair and lacked sharpness of the microscopic details (Fig. 2). Similarly, the sections of liver obtained by routine paraffin embedding technique revealed a very good differential staining with shrinkage induced artifacts (Fig. 3), but sections of liver obtained by plastination technique revealed well maintained architectural details with compactly arranged cellular structures with no shrinkage induced artifacts (Fig. 4).

The sections of kidney obtained by routine paraffin embedding technique also showed good differential staining with clarity in both nuclear and cytoplasmic details (Fig. 5), but on the other side the sections of kidney obtained by
plastination embedding technique revealed compactness of the cellular structures with no shrinkage induced artifacts. The glomeruli showed compact arrangement of glomerular tufts as well as tubular structures (Fig. 6). Thus the light microscopic observations of plastination sections revealed an excellent maintenance of histological architecture of tissues without any tissue shrinkage, but with poor differential staining and lack of cytoplasmic and nuclear clarity. However, certain pathological changes such as vacuolar degeneration of hepatocytes as well as bacteria in the tissues were appreciable.

The better preservation of morphological architecture could be due to the better infiltration of indigenous plastination material and also absence of shrinkage induced artifact as no deplastination of the tissue was carried out in the present study. The observations of the present study were in accordance with those of Grondin et al. (1994) and Ripani et al. (1996) who employed silicon as the plastination embedding material and deplastinated the tissue sections with sodium methoxide. Ravi and Bhat (2011) opined that some staining procedures were slightly prolonged. They indicated that silicon embedded sections could be used for both light and electron microscopic studies after proper deplastination.

REFERENCES


