

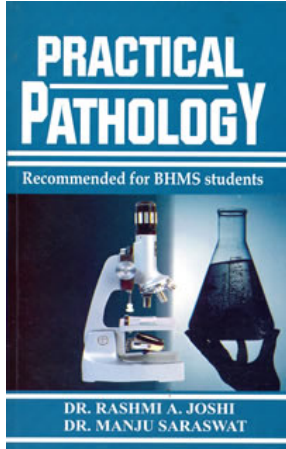
# Rashmi A. Joshi Practical Pathology

Reading excerpt

[Practical Pathology](#)

of [Rashmi A. Joshi](#)

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Narayana Verlag GmbH, Blumenplatz 2, D-79400 Kandern, Germany

Tel. +49 7626 9749 700

Email [info@narayana-verlag.com](mailto:info@narayana-verlag.com)

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## INTRODUCTION

The blood consists of a fluid of complicated and variable composition, the plasma, in which are suspended erythrocytes (red blood cells) leukocytes (white blood cells) and platelets. By using an anticoagulant, the formed elements can be separated from plasma. When blood coagulates the fluid that remains after separation of a clot is called serum. Serum = Plasma - fibrinogen. The techniques of hematology are concerned mainly with the cellular formed elements of blood, their number or concentration, the relative distribution of various types of cells and the structural or biochemical abnormalities that promote disease.

### 1.1 Collection of Blood Sample

#### 1. By venepuncture

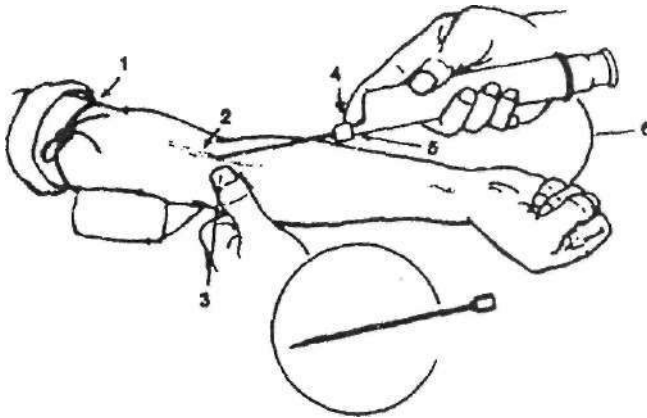
The blood flows through the vessels. Before it could be examined a sample is required to be taken out from the body. Therefore, puncturing the body tissues is inevitable before a sample could be obtained. When we puncture the skin to obtain the sample of blood, there is always a danger of entry of bacteria in the body tissues. While puncturing the skin meticulous care is taken to prevent the entry of bacteria even by chance and the skin is maintained in a condition free from bacteria (Asepsis).

#### **Sterilization of the skin**

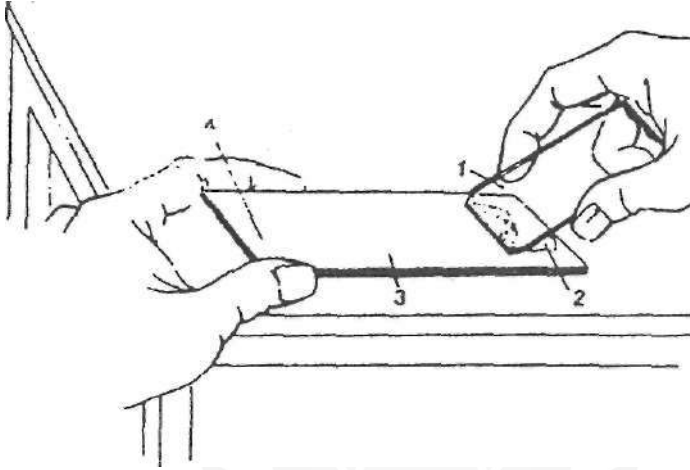
The area of the skin to be punctured must be cleaned with a sterile swab of absorbent cotton wool soaked in methylated spirit, 70% alcohol or ether. Final cleaning should be done with galize cloth. After cleaning, the liquid should be allowed to dry by evaporation.

#### **Sterilization of instruments**

All the instruments coming in contact with the puncture should be sterilized.



9. Decide the spot, it should be about half a cm below the point where the vein is maximally prominent. Puncture the skin by pushing in the needle firmly and steadily holding it at an angle of  $10^{\circ}$  to  $15^{\circ}$  to the skin.
10. Put a slight drag on the piston with your little or ring finger to induce a little negative pressure in the syringe.
11. Push the needle along the line of the vein and if necessary an increased angle to puncture the vein. When the vein is punctured blood will appear in the syringe and the resistance encountered for pulling out the piston will be suddenly reduced.
12. Fix the syringe with left hand and slowly withdraw the piston with the right hand as the blood starts entering the syringe.
13. When sufficient amount of blood has been withdrawn hold syringe with the little and ring fingers supporting the piston and the index finger on the butt of the needle.
14. Remove the tourniquet with left hand.
15. Place a piece of sterile cotton wool on the puncture with left hand and press lightly.

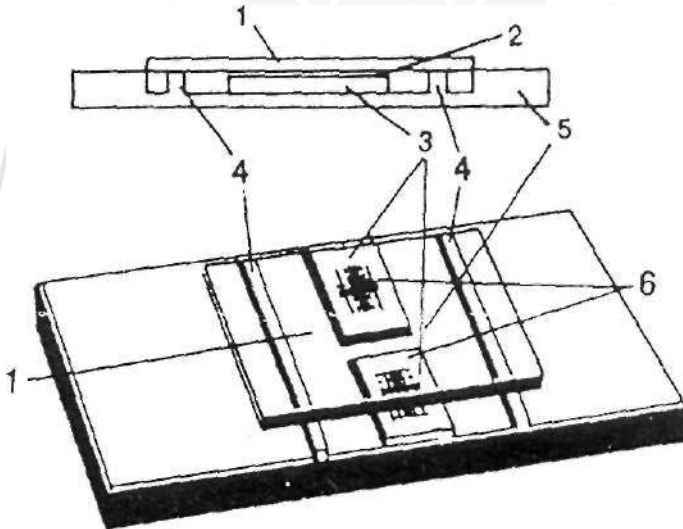


5. The spreader glass slide is held along its long edges to form an acute angle of  $30^{\circ}$  to  $40^{\circ}$  (on the right side) with the glass slide.
6. The smooth narrow edge of the spreader is made to touch the left end of the drop, which is then made to spread along the edge of the spreader.
7. Now push the spreader ahead of the left end with quick but uniform motion and a light but even pressure. The blood follows the spreader to form a film.
8. Keep it away in the open to dry or dry it by waving in the air.
9. Prepare at least three films in the same way from the same puncture.
10. First observe against light and then under microscope.

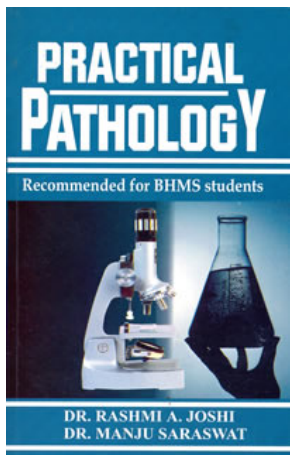
### *Observations*

A well made smear is uniformly distributed over the slide in its middle third. Its head i.e. the straight edge at the right, begins

- (2) Counting chamber or Neubauer's chamber: It is a thick glass slide with a central depressed platform separated on either side from the remaining platform by deep moats. The surface level of this platform is exactly 0.1 mm lower than the general surface on which the cover glass rests. This depressed platform is accurately ruled in squares and appearing on it is always  $1/20\text{mm}$  each of the smallest square which has an area of  $1/400\text{ sq.mm}$ . In Neubauer's chamber, the central depressed platform is divided into two parts by a lengthwise moat and from the surrounding slide by two breadth wise moats. The special cover glass rests on the two side flanges.



- |                               |                           |
|-------------------------------|---------------------------|
| 1. Optically plane cover slip | 2. 0.1 mm height distance |
| 3. Depressed platforms        | 4. Two transverse moats   |
| 5. Longitudinal moat          | 6. Rullings               |



Rashmi A. Joshi

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