

# Chapter 4

## Fundamental Surgical Techniques

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### 4.1 Introduction

This chapter delineates the fundamental techniques used for surgery in hamsters.

### 4.2 Shaving the Animal

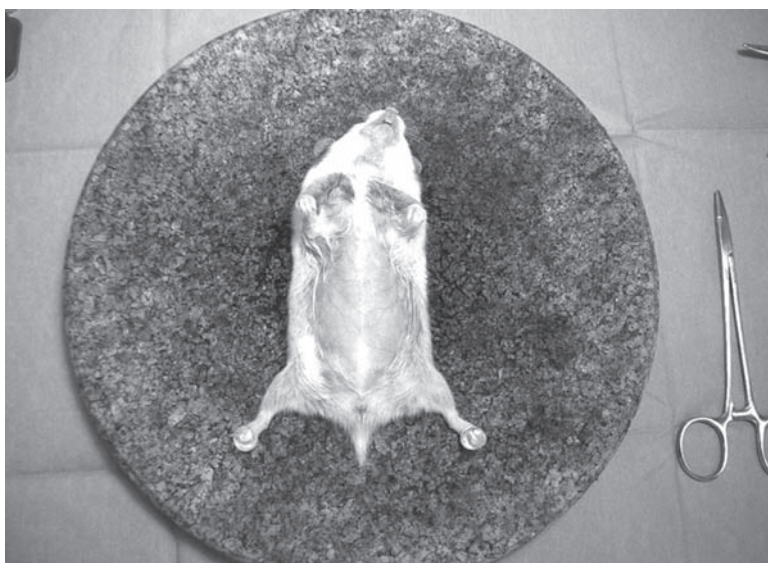
After the induction of general anesthesia, the hamster is placed on its back on the operating board. The thin hairs on the hamster's abdomen are shaved off with a razor (Figure 4.1) after the area is sprayed with alcohol to moisten and disinfect the abdominal wall.

### 4.3 Opening the Abdominal Wall

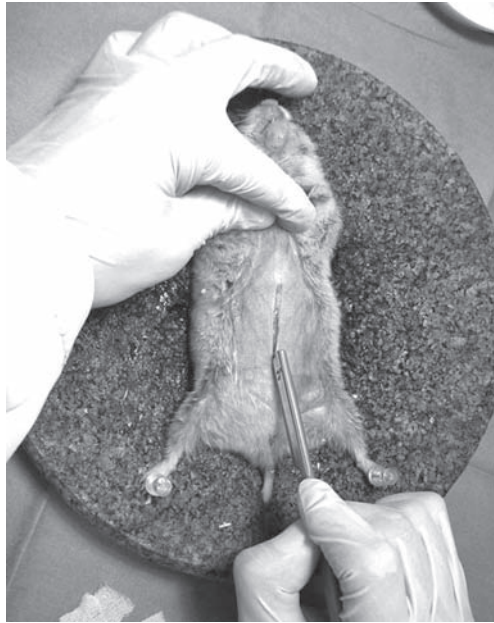
After shaving, the animal is held in the supine position and secured to the operating table with pins (Figure 4.2). It should not be necessary to fix the limbs if adequate general anesthesia has been given. A midline skin incision is made from the level of the xiphoid process to below the navel using a razor (Figure 4.3). The abdominal muscles are lifted with forceps and a small incision is made to allow air to enter the peritoneal cavity (Figure 4.4). One side of the scissors is inserted into the abdominal cavity to lift up the abdominal wall and the abdomen is opened by making an incision over the linea alba towards the xiphoid cartilage. The "paper clip" wound retractors are effective for obtaining a wide operative view (Figure 4.5). A small piece of wet gauze can be used to fix the left lateral lobe of the liver (Figure 4.6) and the small intestine, and to moisten these organs.



**Fig. 4.1** Shaving the hamster



**Fig. 4.2** Operating position. The hind legs are secured to the operating board with pins



**Fig. 4.3** Opening the abdominal cavity. A midline skin incision is made using a razor



**Fig. 4.4** Opening the abdominal cavity. A small incision is made in the abdominal muscles to allow air to enter the peritoneal cavity



**Fig. 4.5** Retraction of the abdominal wall using paper clips



**Fig. 4.6** Fixation of the left lateral lobe of the liver using a small wet piece of gauze



## 4.4 Closure of the Abdominal Wall

The abdominal wall is closed in two layers: The first layer is the peritoneum and abdominal muscle, which is closed with a continuous absorbable 4-0 suture (Figure 4.7). Attention must be paid to the tension of the thread so as not to shorten the abdominal wall. The second layer is the skin, which is closed using the same technique with an absorbable 2-0 suture (Figure 4.8).



**Fig. 4.7** Closure of the abdominal wall. The abdominal muscle is closed with a continuous absorbable 4-0 suture



**Fig. 4.8** Closure of the abdominal wall. The skin is closed using the same technique with an absorbable 2-0 suture

## 4.5 Blood Sampling

Collecting peripheral blood from hamsters is difficult. To collect a large quantity of blood, a cardiac puncture can be performed. We usually take a blood sample from the inferior vena cava at the end of the experimental protocol. After a laparotomy, the inferior vena cava is exposed and a 22G needle with a 20 cm-long polyethylene tube is pushed into the vena cava (Figure 4.9). A 5 ml syringe is attached to the tube without changing the needle position (Figure 4.10), and blood can be withdrawn.



**Fig. 4.9** Blood sampling. The inferior vena cava is exposed



**Fig. 4.10** Blood sampling. A 22G needle with a 20 cm-long polyethylene tube is pushed into the vena cava and blood flows out immediately

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