Manual

Placement of The PRS Cannulae and Chamber Irrigation- / Aspiration - / Agitation - System

COMBAT MEDICAL LTD
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Manual

Placement of The Combat Cannulae and Chamber

Irrigation - / Aspiration - / Agitation - System

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<u>STEP 1</u>: ***Position the "Mushroom".***

The mushroom must be placed at the highest point of the abdomen. This is to ensure that the CO_2 passes through the abdomen and into the chamber without collecting under the abdominal wall. Efficient circulation of CO_2, without the formation of a large gas bubble in the cavity, ensures that both heat and chemotherapy are effectively circulated to all parts of the abdomen – **Figure 1.**

Optimal placement of the "mushroom" is periumbilical, as seen in - **Figure 2**.

The base of the CO_2 chamber should be placed at the optimal site and marked with a stab incision.

If necessary, during the procedure you can correct the patient´s position by adjusting the table so that the CO_2 chamber is always positioned at the highest point of the abdomen.

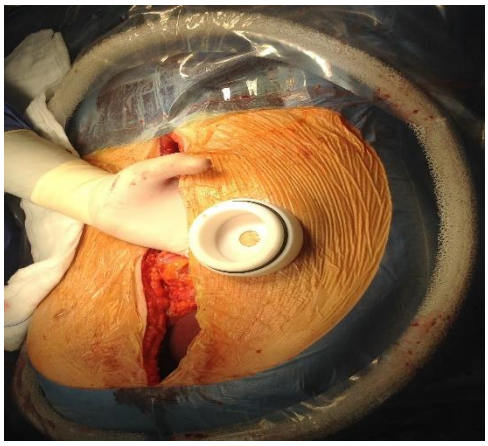

Figure 1

Figure 2

Dilate the fascia and muscle layers and insert the "mushroom" into the abdominal wall from inside to out, **Figures 3, 4 & 5**.

Figure 3 **Figure 4**

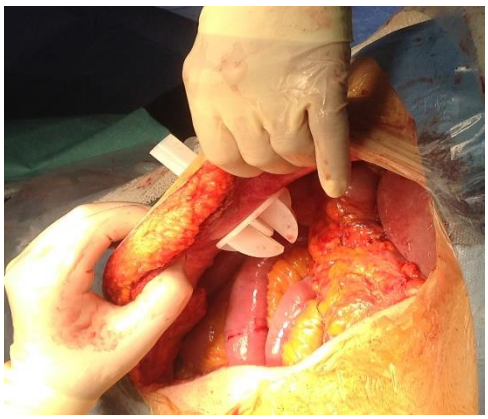

Figure 5

The long portion of the mushroom should protrude 1-2cm from the abdominal wall to prevent leakage during the procedure.

The base of the CO_2 chamber is placed over the extra-abdominal portion of the "mushroom" and the tube should be trimmed with scissors and sealed with the plug. The plug should be fully inserted to avoid leakage during the procedure. **Figures 5, 6 & 7**

Figure 6

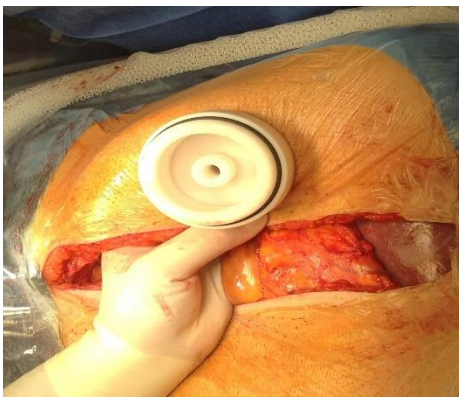

Figure 7

STEP 2: ***Position the Cannulae***

The position of the cannulae is decided by the surgeon but the following general recommendations apply.

The entry points into the abdomen for the irrigation and aspiration cannulae are generally at either end of the laparotomy incision, however, they can also be placed in independent incisions. The cannulae must always be secure so as to minimise leakage.

Guidelines for Positioning of the multiperforated Intra-abdominal Cannulae

The Aspiration Cannulae:

This should enter from the superior end of the laparotomy and the arms should be positioned deep posteriorly in the abdomen. They should run along the subphrenic spaces to the Iliac Fossae - **Figure 8**

The left arm of the aspiration cannula is shorter than the right in order to avoid proximity to the CO_2 inflow cannula and subsequent aspiration of gas - **Figure 9**

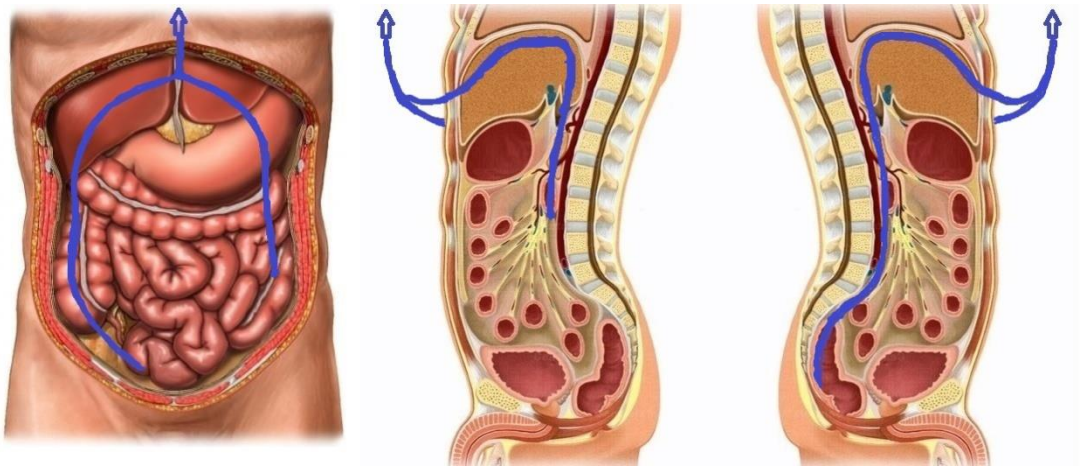

Figure 8

Figure 9

The Irrigation Cannula:

This should enter from the inferior end of the laparotomy and the arms should be positioned anteriorly in the abdomen, running from the pelvis to the diaphragm. Anterior placement avoids direct flow of fluid from the irrigation to the aspiration cannula - **Figure 10 & 11**

Figure 10

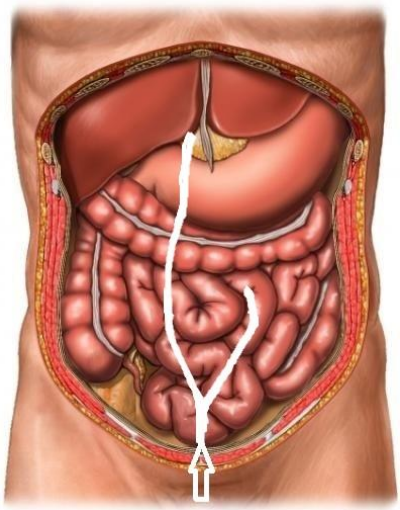

Figure 11

The CO_2 Cannula

Entry should be through an independent incision in the left iliac fossa with the incision tight to the diameter of the probe, **Figure 12**.
The three arms of the cannula, **Figure 13**, should be spaced throughout the abdomen as deeply as possible. It´s critical that the CO_2 inflow cannula's arms do not come into close contact with the fluid aspiration cannulae. This will prevent CO_2 entering the fluid circulation system.

Figure 12

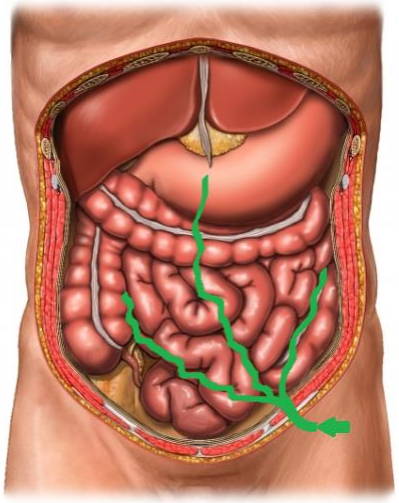

Figure 13

These recommendations are based on experience and give the optimal circulation of fluid and gas. However, the surgical team are ultimately responsible for the positioning of the intra-abdominal cannulae, the site of the incisions and the location of the CO_2 chamber.

<u>STEP 3</u>: ***Closing the Laparotomy and Securing the Cannulae.***

Once the cannulae are positioned within the abdomen they are fixed to the abdominal wall.

The fixation of the CO_2 cannula can be done independently using a medium to thick silk suture. **Figures 13 & 14.**

Figure 13

Figure 14

The fixation of the fluid cannulae can be done at both ends of the laparotomy, encircling the tube with a continuous / crossed medium to thick suture which is then fixed to the skin. **Figure 15.**

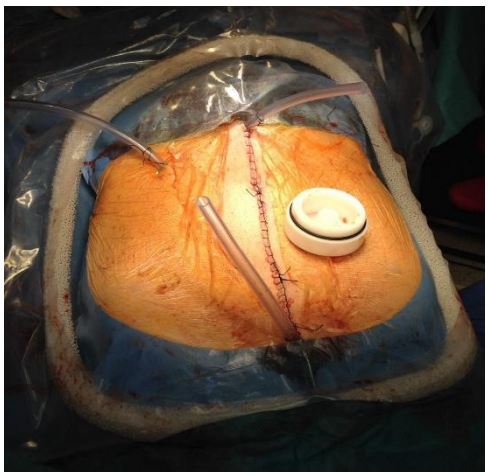

Figure 15

<u>STEP 4</u>: ***CO2-Chamber and Holder***

Once the abdomen is closed, the CO_2 chamber can be positioned.

The transparent CO_2 chamber and the cap are fixed to the base of the CO_2 chamber.

The two-piece metal arm is fixed to the table with a clamp. The vertical arm is then adjusted to the height of the CO_2 chamber horizontal arm and clamp are fixed to the CO_2 chamber.

The base of the CO_2 chamber should be raised with the holding clamp to a level over the abdominal skin – to the highest point of the abdomen. **Figures 17 & 18**

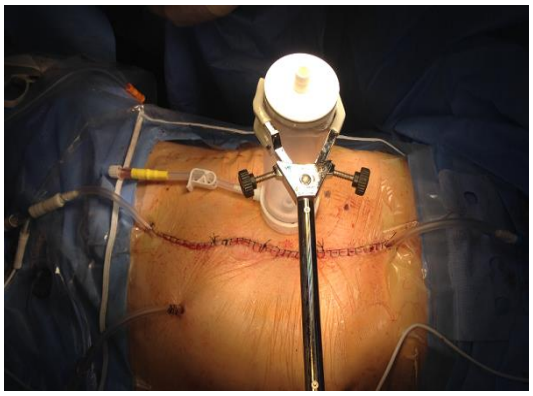

Figure 17

Figure 18

<u>STEP 5</u>: ***Connecting the Lines to the PRS***

Finally, both the irrigation and aspiration lines are connected to the corresponding lines on the PRS machine. Ensure that the coloured lines are connected to each other – Blue for the aspiration line and White for the irrigation line. **Figures 20, 21 & 22**

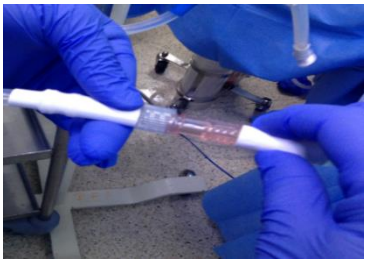

Figure 20

Figure 21

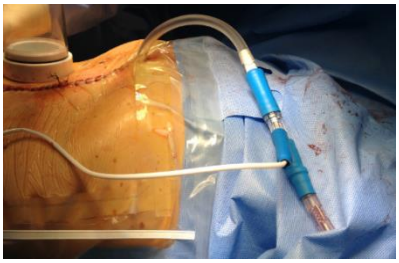

Figure 22