CLINICAL CASE

Product: RAD-GUIDE™

Subject: Multiple radiofrequency (RF) renal tumor ablation with the RAD-GUIDE

Description: High risk surgery patient with 3 renal masses referred for percutaneous ablation. White arrows show lesions on pre-ablation CT performed without contrast.

Description of the intervention

1. Lesion 1 is an undetermined 7 mm nodule better seen on post-contrast images.
2. Lesion 2 is a solid mass.
3. Lesion 3 is a complex mass.

Images descriptions

1. 20 cm needle was first inserted with adequate orientation (black arrow).
2. Needle moved forward to reach the abscess.
3. Guidewire inserted (not shown), top plate and needle removed (white arrow) and catheter inserted over the wire. The abscess completely drained (black arrow).

Discussion: This case illustrates the usefulness of the RAD-GUIDE to support a long needle and directly reach a deep target. The long needle had to be deeply inserted from the beginning because it would not have entered into the CT gantry.

Two RAD-GUIDEs were necessary to support RF and biopsy needles in adequate orientation. RAD-GUIDEs are seen in blue (white arrows) and 3 RF needles (black arrows).
**CLINICAL CASE**

**Description of the Intervention**

The use of 2 RAD-GUIDEs was necessary to insert precisely and support 3 long and heavy RF needles in renal masses. The RAD-GUIDE also supported 2 biopsy needles. A sixth needle was also inserted in the lower RAD-GUIDE in order to inject CO$_2$ and dextrose to displace and avoid burning the colon.

**Discussion:**
The heavy RF needles in renal masses. The RAD-GUIDE also supported 2 biopsy needles. A sixth needle was also inserted in the lower RAD-GUIDE in order to inject CO$_2$ and dextrose to displace and avoid burning the colon.

**Diagnostic CT:** White arrows show the residual abscess.

**Reference grid on patient’s skin for choosing entry point.**

The red line drawn on CT monitor helps you to choose the appropriate hole in the plate of the RAD-GUIDE to easily reach the abscess.
CLINICAL CASE

Description of the Intervention

3. After freezing and choosing the hole in the top plate, the guiding needle is moved forward and supported by the RAD-GUIDE (white arrow).

4. The long guiding needle is moved forward until reaching the adenopathy. Top plate was dropped down allowing to easily angulate the needle (white arrow).

5. Coaxial biopsy needle inserted for adenopathy biopsy (white arrow).

Discussion:
The RAD-GUIDE supported a long biopsy needle which usually would have to be deeply inserted before it stays still, especially in fat. This case illustrates the capacity for the RAD-GUIDE to save you time by avoiding multiple needle repositioning. It also gives you different and often safer approaches because any angulated approaches are made not only possible but even easy.

Product: RAD-GUIDE™
Subject: CT guided mediastinal mass biopsy with the RAD-GUIDE
Description: Patient with a right lower lobe pulmonary nodule and subcarinal adenopathy. Histologic diagnosis was necessary and subcarinal mass biopsy was considered easier and safer than getting samples from the small (1 cm) pulmonary nodule.

Pre Biopsy CT

Reference grid on patient’s skin to choose the best entry point to reach the subcarinal mass (white arrow). The best path is to avoid going through the lung (yellow line). However, space is minimal along the vertebral body.

A yellow line is drawn from the mass through the skin entry point (identified by the freezing needle) and beyond the top plate (curved white arrow).
Description of the intervention

- The guiding needle is moved forward in the paravertebral space. Saline is injected to displace the pleural space and the lung. Saline is seen also dissecting posteriorly (white arrow). This injection creates a secure straight path from skin to target. Guiding needle will not be long enough to reach mass (yellow arrow).
- Coaxial trocart needle is introduced in the guiding needle. Top plate of the RAD-GUIDETM is dropped down (yellow arrow) allowing to reach the mediastinal mass (white arrow).

Discussion: This case shows the advantage of injecting saline to create a pseudo-space and avoid entering the lung with the risk of pneumothorax. The RAD-GUIDE allows a straight path and stable needle position during needle movements and saline injection.

CT approaches for biopsy

1. Prone CT before biopsy showing a retroperitoneal adenopathy (long white arrow) adjacent to the IVC (short white arrow). Standard approach would be paraspinal vertical through muscles, possibly more painful and with increased risk of bleeding.

2. White line shows the standard vertical approach. Yellow line shows an easy alternative approach with the RAD-GUIDE which almost only goes through fat. The RAD-GUIDE will support adequately the long biopsy needle.
CLINICAL CASE

**Description of the intervention**

The guiding needle is moved forward in the paravertebral space. Saline is injected to displace the pleural space and the lung. Saline is seen also dissecting posteriorly (white arrow). This injection creates a secure straight path from skin to target. Guiding needle will not be long enough to reach mass (yellow arrow).

Coaxial trocart needle is introduced in the guiding needle. Top plate of the RAD-GUIDE™ is dropped down (yellow arrow) allowing to reach the mediastinal mass (white arrow).

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**CT approaches for biopsy**

1. Prone CT before biopsy showing a retroperitoneal adenopathy (long white arrow) adjacent to the IVC (short white arrow). Standard approach would be paraspinal vertical through muscles, possibly more painful and with increased risk of bleeding.

2. White line shows the standard vertical approach. Yellow line shows an easy alternative approach with the RAD-GUIDE which almost only goes through fat. The RAD-GUIDE will support adequately the long biopsy needle.

**Product:** RAD-GUIDE™

**Subject:** CT guided retroperitoneal biopsy with the RAD-GUIDE

**Description:** Patient with history of bladder cancer with CT diagnosis of retroperitoneal adenopathy suspicious for cancer recurrence. Percutaneous biopsy was requested and CT was considered the best modality for the intervention.

**June, 2010**
CLINICAL CASE

Description of the Intervention

3. After freezing and choosing the hole in the top plate, the guiding needle is moved forward and supported by the RAD-GUIDE (white arrow).

4. The long guiding needle is moved forward until reaching the adenopathy. Top plate was dropped down allowing to easily angulate the needle (white arrow).

5. Coaxial biopsy needle inserted for adenopathy biopsy (white arrow).

Discussion:

The RAD-GUIDE supported a long biopsy needle which usually would have to be deeply inserted before it stays still, especially in fat. This case illustrates the capacity for the RAD-GUIDE to save you time by avoiding multiple needle repositioning. It also gives you different and often safer approaches because any angulated approaches are made not only possible but even easy.

Reference grid on patient's skin to choose the best entry point to reach the subcarinal mass (white arrow). The best path is to avoid going through the lung (yellow line). However, space is minimal along the vertebral body.

A yellow line is drawn from the mass through the skin entry point (identified by the freezing needle) and beyond the top plate (curved white arrow).
CLINICAL CASE

Description of the intervention

First RF needle
Second RF needle
Third RF needle

RAD-GUIDE (white arrow) supporting a needle used to inject CO₂ between the colon and the lesion (red arrow).

The use of 2 RAD-GUIDEs was necessary to insert precisely and support 3 long and heavy RF needles in renal masses. The RAD-GUIDE also supported 2 biopsy needles. A sixth needle was also inserted in the lower RAD-GUIDE in order to inject CO₂ and dextrose to displace and avoid burning the colon.

Discussion:

The 67 Y.O. patient with previous percutaneous abscess drainage secondary to an abdominal surgery. A second collection was considered too deep for percutaneous drainage and treated with antibiotics. Patient came back with fever and abdominal pain.

Diagnostic CT: White arrows show the residual abscess

Reference grid on patient’s skin for choosing entry point.

The red line drawn on CT monitor helps you to choose the appropriate hole in the plate of the RAD-GUIDE to easily reach the abscess.

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**Discussion**
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