

The logo for Mirror Simulation features a blue circle containing a white stylized 'm' on the left. To its right, the word 'Mirror' is written in blue, 'Simulation' in purple, and 'the most advanced aesthetic simulation software available' in grey. A purple circular icon with a white profile of a face is on the right.

# Mirror Simulation

the most advanced aesthetic  
simulation software available

version 7

## User Guide

### technical support

*phone (USA):* 1.800.815.4330

*phone:* +1.973.276.0336

[techsupport@canfieldsci.com](mailto:techsupport@canfieldsci.com)

 **CANFIELD Imaging Systems**  
a division of Canfield Scientific, Inc.

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253 Passaic Avenue, Fairfield, NJ 07004-2524 USA  
fax +1.973.276.0339 • [www.canfieldsci.com](http://www.canfieldsci.com)

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# Mirror<sup>®</sup> Simulation User Guide

This user guide details functionality specific to the Mirror Simulation modules including procedure-specific simulation modules. Please refer to the *PhotoFile Medical Image Management User Guide* for information on the core image management functions (installation, storage/retrieval, printing, etc.). If you have purchased additional modules such as *PhotoTools*, *Skin Rejuvenation*, or *Body Mapping*, please refer to the separate documentation for those modules.

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## CHAPTER 1

# Shape Tools

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## 1.1 USING SHAPE TOOLS

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- Overview**
- The SHAPE menu contains tools, which, in general, manipulate the shape of areas in a picture.
  - A picture must be displayed in order for the shape tools to be available.
  - After selecting a shape tool, a submenu appears which corresponds to the selected tool, and which may contain tool-specific commands or settings.
  - Pressing the pen's side button from the tool screen returns to the main menu.

**Using Shape tools** When using a Shape tool, circle an area on the active picture, tap inside the circle, and then manipulate the circled area.

Once you have circled and selected an area, you can switch between the available Shape tools without re-circling the area.

- How to circle**
- 1** To circle an area, apply pressure with the pen tip on the tablet and drag the pen lightly on the tablet to form a circle.
  - 2** To close a circle, lift the pen from the tablet.
  - 3** If the circle is unsatisfactory, press the pen's side button and start a new circle.

**How to manipulate the circled area** In general, tap inside the circled area and move the pen to manipulate the picture. When the selection box appears, move the pointer until the pointer style changes. Select the desired action by tapping the pen when the pointer shows the desired action. Move the pointer to manipulate the picture.

From within a shape tool you have access to many of the View tools, the Shape tools (this chapter) and the Draw tools (next chapter).

The **UNDO** button removes from the picture all changes made since the last save or since the tool was activated.

The **SAVE** button saves edits made to the picture to the gallery. To save edited pictures to the patient's chart select File, then Save Pictures from the main menu.

The **FADE** button allows you to blend the recently altered area of the picture with the original picture to soften effects.

Once you've circled and manipulated an area with a shape tool, you can switch between the available shape tools in the tool's menu without re-circling the area, as long as the blue selection rectangle appears around the circled area.

## 1.2 WARP

---

Using Warp, you can reshape selected areas of a picture as if the selected areas were made of modeling clay. After circling an area, the defined area can be “pushed” and “pulled” by moving the pen.

The **BILATERAL MODE** button allows you to reshape both sides of a symmetrical feature at the same time.

Use the **CIRCLE MODE** button to precisely define the area you want to warp or to mark an irregularly shaped area (e.g., eyelids).

The **TRANSPARENCY MODE** button makes the warped area transparent so you can easily compare the changes to the original shape.

### **Warping a defined area**

- 1** Select the **CIRCLE MODE** tool.
- 2** Circle a feature or area of the picture.
- 3** Select the area of the feature you want adjusted the most.
- 4** Move the pen to move the circled area.
- 5** Tap to freeze the change. A selection box appears.
- 6** Tap with the **Hard-edges** pointer to paste the area as is, or tap with the **Blended-edges** pointer to paste the area so its edges blend with the picture, or press the pen’s side button to cancel.

### **Warping freehand**

- 1** Tap on the area of the feature you want to receive the most manipulation.
- 2** Move the pen tip carefully in ever-widening circles to loosen the feature.

**3** Move the pen in the direction you want the feature to move.

**4** Tap the pen to finish.

### **Warping a defined symmetrical feature**

**1** Select the CIRCLE MODE tool and the BILATERAL MODE tool.

**2** Circle the symmetrical feature—including both sides in the circle.

**3** Select one side of the feature.

**4** Move the pen to reshape the feature. The reshaping occurs from both sides.

**5** Tap to freeze the change. A selection box appears.

**6** To accept the change, tap with the blended-edges pointer tap the pen or to reject the change, press the pen's side button and restart.

### **Warping a symmetrical feature freehand**

**1** Select the BILATERAL MODE tool.

**2** Tap the pen on one side of the symmetrical feature. A small marker that looks like the pointer appears.

**3** Tap the other side of the symmetrical feature to place the second marker.

**4** Move the pen to reshape the feature and tap the pen to finish.

**5** Optional: To cancel the change, press the pen's side button.

## 1.3 COPY

---

If you have purchased the *Bleph & Brow* module or the *Breast* module, you may use Copy to duplicate a circled area of the picture. You can flip the copy or move it to another area of the picture or to another picture in the gallery. Common applications include upper blepharoplasty and reconstruction procedures.

**Technique 1** Circle an area(s).

**2** Select the area and move the pen to move the area.

**3** Move the selected area to its new location. (Hint: To move the area to another picture in the gallery, select the picture.)

**4** Tap to place the area. A selection box appears.

- Tap with the Flip pointer to flip the area horizontally.
- Tap with the Move pointer to move the area again.
- Tap with the Hard-edges pointer to paste the area as is.
- Tap with the Blended-edges pointer to paste and blend the area's edges.

### 1.4 RESIZE

---

Use Resize to enlarge or reduce a feature. Common applications include otoplasty, breast augmentation and breast reduction.

Select the **RESIZE FROM CENTER** button to resize the selected area relative to the center of the area, rather than to the corner or side opposite the pointer.

Select the **RESIZE PROPORTIONALLY** button to maintain the aspect ratio of the selected area as you resize it. In other words, height and width change equally. Remove the selection to change height and independently.

- Technique**
- 1** Circle a feature then select it. A selection box appears.
  - 2** Move the pointer just outside of the selection box to view the resize pointers.
  - 3** Tap with one of the pointers and move the pen to shrink or enlarge the feature.
  - 4** Tap the pen to freeze the change.
  - 5** Tap with the Blended-edges pointer to paste the change or press the pen's side button to cancel.

### 1.5 STRETCH

---

Stretch is similar to Resize except that one side of the selected area remains fixed. Common applications include otoplasty and breast augmentation (lateral view).

- Technique**
- 1** Circle a feature with the pen.
  - 2** Select the area and a selection box appears.
  - 3** Move the pen to one of the sides of the box and the pointer changes to a stretch pointer.
  - 4** Tap with a stretch pointer and move the pen to stretch the feature.
  - 5** Tap the pen to freeze the change.
  - 6** Tap with the Blended- or Hard-edges pointer to paste the change.
  - 7** Optional: To cancel the change, press the pen's side button.

## 1.6 ROTATE

---

Use Rotate to rotate a selected area around a point of your choosing. Common applications include nasal tip rotation, chin rotation and breast and nipple rotation.

- Technique**
- 1** Circle a feature.
  - 2** Select a point on the feature to place the rotation axis.
  - 3** Move the pen away from the feature and a line appears. The longer you make the line, the slower and more controlled the rotation. The degree of rotation is displayed in the upper-left corner of the screen as you rotate the feature with the pen.
  - 4** Tap the pen to freeze the change.
  - 5** Tap with the Blended- or Hard-edges pointer to paste the change.
  - 6** Optional: To cancel the change, press the pen's side button.

### 1.7 RUBBER STAMP

---

Use Rubber Stamp to stamp a selected area of the picture as many times as you want elsewhere in the picture or on another picture in the gallery.

- Technique**
- 1** Circle an area.
  - 2** Select the area and move the pen to move the area to another location. (Hint: To move the area to another picture, select the picture from the gallery.)
  - 3** Tap the pen to stamp the circled area onto the picture and repeat as needed.
  - 4** Press the pen's side button to finish stamping and a selection box appears.
  - 5** Tap with the Blended- or Hard-edges pointer to paste the stamped area(s).
  - 6** Optional: To cancel the change, press the pen's side button.

### 1.8 CUTOUT

---

Use Cutout to remove a selected area(s) of the picture and replace it with any area from a copy of the picture that appears underneath the picture. Common applications include jowl removal, submental liposuction (anterior), upper and lower blepharoplasty and nasal tip shortening.

- Technique**
- 1** Circle an area of the picture.
  - 2** Select an area to remove it. A copy of the picture appears underneath the removed area.

- 3** Move the pen to adjust the copy within the removed areas.
- 4** Once the desired picture data fills the removed area, tap the pen to freeze the change. A selection box appears.
- 5** Optional: Select the area with the Move pointer to reposition the underlying picture.
- 6** Tap with the Blended- or Hard-edges pointer to paste the picture data from the underlying picture into the picture.
- 7** Optional: To cancel the change, press the pen's side button.

## 1.9 EXCISE

---

Use Excise to quickly replace an area or areas that are darker than the surrounding skin tone with skin from the surrounding area. Common applications include mole removal or tattoo removal.

- Technique**
- 1** Circle the area or areas of darker pigment.
  - 2** Select an area and move the pen up and down and the area is identified in yellow.
  - 3** Move to the top of the screen to identify 100 percent of the area, move to the bottom to identify 0 percent, or find a percentage in between.
  - 4** Tap the pen to select a percentage and the system switches to Cutout mode.
  - 5** Move the pen to move a copy of the picture within the area so that it covers the identified area(s). For more information, see “Cutout” earlier in this chapter.

**6** Tap the pen and the system changes to Fade mode. Move the pen up and down to find the amount of blending you want and tap the pen. A selection box appears.

**7** Tap with the hard edges pointer to permanently paste the edit; or press the pen's side button to return to Fade mode.

### 1.10 FADE

---

Use Fade to soften an edit's effect for a more natural appearance.

**1** Circle an over-edited area or areas on the picture.

**2** Select an area and move the pen up and down. The selected edits will fade in and out.

**3** Tap the pen when you see the appropriate amount of blending between the edit and the original picture.

**4** Optional: Tap to find another Fade percentage.

**5** Press the pen's side button to paste the change.

**6** Optional: To cancel the changes, select the Undo button in the menu bar.

## CHAPTER 2

# Draw Tools

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## 2.1 USING DRAW TOOLS

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**Overview** Draw tools are available once you open a picture. Select a tool and a tool menu appears containing tool-specific options.

- You can draw freehand or along a set line.
- Press the pen's side button to return to the main menu.
- Select the **UNDO** button to erase all changes made since the last save or since the tool was activated.
- Select the **SAVE** button to save the edited picture to the gallery. To save the changes to the patient's record, select File then Save Pictures from the main menu.
- Select the **FADE** button to interactively blend the recently edited area of the picture with the original version to soften the edit.
- Select a brush for the drawing tool.
- Select an opacity tool to set the tool's opacity or intensity. Use less than 100 percent opacity when you want to overlay colors. As you continue to apply color to the same area, the percentage increases to a maximum of 100 percent.

- Freehand drawing**
- Tap and drag the pen to draw and lift the pen to stop.
  - Tap and drag the pen to continue freehand drawing, or tap with the pointer dot to place a curved line (see “Drawing with Curved Lines”).
  - Press the pen’s side button once to return to the tool’s menu and twice to return to the main menu.

- Drawing with curved lines**
- With the pointer dot, place the beginning and ending points of the curved line.
  - Move the pen to shape the curve (along a profile for instance).
  - Tap and drag the curve, to apply the tool along the line and lift the pen to stop.
  - Tap and drag the pen to resume drawing along the line.
  - To reset the line, press the pen’s side button.
  - Press the pen’s side button twice to return to the tool’s menu and three times to return to the main menu.

- Erasing** To erase in freehand or curve mode, press the pen’s side button while drawing and lift the side button to stop.

## 2.2 WRINKLE TOOL

---

The Wrinkle tool is used for removing or softening wrinkles. The tool is also useful for applications such as tattoos or blemishes.

**Technique 1** Select a brush size and an opacity percentage from the menu bar.

**Tip: Best results are typically achieved using opacity values of 50% or 75%.**

**2** Freehand draw over the area you wish to soften. As you draw, the area to be softened will be highlighted.



**3** Lift the pen or release the mouse button. Wrinkles and blemishes in the selected area will be softened.



**4** Press the pen's side button to exit the Wrinkle tool and save all changes to the gallery.

Note: Unlike other draw tools, the Wrinkle tool does not support drawing along a curved line. The Wrinkle tool may only be used in freehand mode.

### 2.3 RESURFACING TOOL

---

Use Resurfacing to show a patient the potential results of laser resurfacing, including showing standard or custom post-op redness. This tool helps demonstrate realistic results.

**Resurfacing View menu** **Compare** – Transforms an edited image from its original version to its edited version.

**Side-by-Side** – Places the original and adjusted images next to each other.

**Method** – Shows Compare and Side-by-Side views in normal or embossed mode.

**Show Redness** – Displays varying degrees of post-op redness in selected areas.

**Layers** – Opens a dialog through which you can show or hide the layers of information associated with the image.

**Resurfacing Options menu** **Select Shade** – Opens a dialog through which you can choose the shade of red that best represents the patient's post-op redness. This shade is applied when you select SHOW REDNESS.

**Reset Shades** – Resets the Custom Shades in the Select Shade dialog to their default settings. Reset Shades is available only if you have modified the Custom Shades palette in the Select Shade dialog.

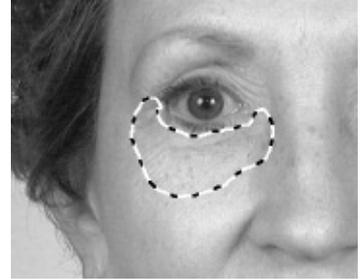
**Resurfacing tools** **Undo** – Removes edits made since the last save or since the tool was activated.

**Save** – Saves the edited image to the gallery. To save the edits to the patient's chart, select **FILE** then **SAVE IMAGES** from the main menu.

**Fade** – Blends an edit with the original image to soften edits.

**Demonstrating Resurfacing** **1** From the main menu, select **TOOLS** then **RESURFACING**.

**2** Circle one or more areas on the patient image.



**3** Click inside any circled area.

**4** Move the pointer up and down to adjust the amount of simulated resurfacing. Tap or click to select the current results.

**5** Optional: To show simulated post-op redness, select **VIEW** then **SHOW REDNESS**. Move the pointer up and down to demonstrate the healing process.

**6** Press the pen's side button or right-click to exit the Resurfacing tool and save all changes to the gallery.

### 2.4 AIRBRUSH

---

Use Airbrush to apply a custom color or a color from the picture to a picture. Apply the color freehand or apply it along a contour line.

Common applications include rhinoplasty (lateral view), submental liposuction (lateral view), adding shadows or highlights and adding surgical markings or incision lines.

The pointer appears as a brush in the Airbrush screen.

#### **Selecting a custom color**

- 1** Select the COLOR PALETTE button and the Color dialog appears.
- 2** Select a color under Basic colors or Custom colors and click OK, or create your own color.
- 3** Select an existing custom color to overwrite.
- 4** Tap and drag the target to a color.
- 5** Optional: Tap and drag the pointer in the slide bar to edit the color's saturation.
- 6** Click ADD TO CUSTOM COLORS and tap OK to apply the color to the brush.

#### **Technique**

- 1** Select a brush and opacity for the tool.
- 2** Select a color from the picture or select the color palette and choose another color. (See “Selecting a Custom Color.”) The menu disappears.
- 3** Freehand draw or draw with a curved line. For information about drawing techniques, see “Using Draw Tools” earlier in this chapter. (Hint: To draw on another picture, select it from the gallery.)

**4** When finished, press the pen's side button.

**5** Optional: Select a new color with the pointer and repeat.

**Tip: To erase a drawn line, press the pen's side button as you draw.**

## 2.5 TEXTURE

---

Use Texture to apply a texture (or group of colors) from the picture elsewhere on the picture. Common applications include removal of nasolabial folds, removal of platysmal bands, upper eyelid crease, color correcting edits.

The pointer appears as a brush in the Texture screen.

Select **SMEAR MODE** (the standard position) to smudge the texture as you apply it. Remove the selection to apply the texture in a repeating pattern.

- Technique**
- 1** Select a brush, an opacity percentage and a texturing style from the menu bar.
  - 2** Select a texture from the picture with the brush pointer.
  - 3** Draw on the picture freehand or along a curved line. For more information about drawing techniques, see "Using Draw Tools" earlier in this chapter.
  - 4** Press the pen's side button to return to the Texture menu.
  - 5** Optional: Select another texture and repeat.
  - 6** To save the change, click the **SAVE** button from the tool's menu bar.

**7** Optional: To cancel, click the UNDO button from the tool's menu bar.

### 2.6 BLEND

---

The Blend tool smoothes and averages on-screen color and can be applied with the brush or curved line. Use Blend carefully; if an area is over-blended, it appears smudgy.

Common applications include resurfacing fine wrinkles, smoothing color, smoothing profile edits.

- Technique**
- 1** Tap a brush size from the brush size buttons.
  - 2** Tap the intensity from the blending buttons.
  - 3** Freehand draw or blend along a curved line. While blending, the Blend menu disappears.
  - 4** Press the pen's side button to return to the Blend menu.

### 2.7 ERASE

---

The Erase tool is used to correct a mistake, or to lighten the effect of a previous edit.

- Technique**
- 1** Select a brush from the brush size buttons.
  - 2** Select an opacity percentage. (Hint: Select 100% opacity to bring back all of the original picture data, or select a smaller percent to leave part of the edit.)
  - 3** With the pen, erase freehand or along a curved line. While erasing, the Erase menu disappears.
  - 4** Press the pen's side button to return to the Erase menu.

**5** Select **SAVE** from the Erase menu bar to save the changes.

**6** Optional: To cancel the change, select **UNDO** from the Erase menu bar.

## 2.8 CLONE

---

If you have purchased the *Bleph & Brow* module or the *Breast* module, you may use Clone to copy an area to another part of the picture or to another picture without having to circle first. Instead of circling, you select a point in the area you want to copy then select the destination and draw to bring in data from the copied area.

Common applications include lower blepharoplasty, upper blepharoplasty, facelift and laser resurfacing.

Select the reverse clone tool to mirror the cloned area, if needed.

- Technique**
- 1** Select a brush size and an opacity percentage from the menu bar.
  - 2** With the pen, select a point in the area that you want to copy.
  - 3** Select the destination in the same picture or in another picture by selecting it from the gallery.
  - 4** Clone freehand or clone along a curved line. While in the clone function, the Clone menu disappears.
  - 5** Press the pen's side button to return to the Clone menu.
  - 6** Optional: Select another destination.

## CHAPTER 3

# Bleph & Brow Module

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Use the Eyelids tool to demonstrate an upper blepharoplasty, open eyes and lift brows. The *Bleph & Brow* module also includes the Copy and Clone tools. Please see chapters 1 and 2 for information on Copy and Clone.

### 3.1 THE EYELIDS MENU BAR

---

**View menu** **Compare** – Transforms a modified picture from its original to edited version with a movement of the pen.

**Side-by-Side** – Places the original and adjusted pictures next to each other.

**Method** – Shows Compare or Side-by-Side view in normal or embossed mode.

**Layers** – Opens a dialog through which you can show or hide layers of information associated with a picture.

**Whiteboard** – Allows you to draw nondestructively on the active picture.

**Shape menu** This menu contains the standard Shape tools (see Chapter 1, “Shape Tools”).

**Eyelid** – Select this option to modify eyes by adding upper lid creases and warping eyes and eyebrows. The Eyelid command is selected to show that it is currently active.

**Draw menu** This menu contains the standard Draw tools (see Chapter 2, “Draw Tools”).

**Tools Undo** – Removes from the picture any edits made since the last save or since the tool was activated.

**Save** – Saves the edited picture to the gallery. To save the edited picture to the patient’s chart, select File then Save Pictures from the main menu.

**Fade** – Blends the selected edit and the original picture with a move of the pen to soften edits.

 The Select eyelid template button allows you to select the eyelid you want to apply to a picture from the eyelid library.

 The adjust eyelid color button allows you to change the color of the eyelids you paste into a picture.

 When selected the automatic placement mode button will automatically place the selected eyelid template to the picture once you define the eyelid. When it is not selected, you can open the eye or raise the brow before placing an eyelid template.

 Select the manually specify iris button to manually calculate the location of the iris. This button is used rarely when opening an eye. Eyelids usually locates the iris for you; however, you may find this button useful on pictures of especially hooded eyelids or on pictures in which the iris is not distinguishable automatically.

 When you raise a brow or open an eye with the show grid button selected, the grid Eyelids uses to reshape the eye and brow will appear.

### 3.2 USING THE EYELIDS TOOL

---

- 1** From the main menu, select **TOOLS** then **EYELIDS**.
- 2** Select the **SELECT EYELID TEMPLATE** tool.
- 3** From the Select Eyelid Template dialog, select an eyelid template and click **OK**.
- 4** To open the eye or raise the brow before you place the eyelid, remove the selection from the **AUTOMATIC PLACEMENT MODE** tool. (See “Raising Brows and Opening Eyes” later in this chapter.) Alternatively, to place the eyelid first, make sure this tool is selected.
- 5** Move the pointer into the active picture and the pointer becomes an eyelid outline with a cross hair in the left corner.
- 6** Align the cross hair on the left corner of the eye and tap the pen. Then select the right corner to set the outline.
- 7** Move the pointer so that the outline conforms to the contours of the lash line and tap the pen.
- 8** If you selected the Automatically place eyelid template tool in step 5, the selected eyelid template appears.
- 9** If you removed the selection from this tool, open the eye or lift the brow before selecting the Select eyelid template tool and placing the eyelid as described previously in these steps.

**10** Raise the brow, open the eye and adjust the color of the eyelid as desired. You can also touch up your changes by using any of the Shape or Draw tools on the EYELIDS menu.

**11** Select the **SAVE** tool from the Eyelids menu to save the changes;

Or

**12** Press the pen's side button then select the **UNDO** tool to cancel the changes.

**Raising brows** You can raise brows before or after you place an eyelid template. Move the pointer to the eyebrow and a blue brow line appears.

Tap on or just under the brow with the this line and move the pointer to lift the brow as needed. To accept the change, tap the pen. To undo the change, press the pen's side button then select the **UNDO** tool.

**Opening eyes** Move the pointer under the eyelid and a green open eyelid outline appears.

Select the lash line at the area of the eye you want to open and move the pointer to open the eye as needed. To accept the change, tap the pen. To undo the change, press the pen's side button then click the **UNDO** tool to restart. (See also "Specifying an Iris.")

**Specifying an iris** When you open an eye, Eyelids adjusts the eye based on the location of the iris. However, there may be rare times when Eyelids cannot locate the iris (e.g., in pictures of extremely hooded eyelids).

When Eyelids cannot locate the iris, opening the eye results in an irregular appearance of the underlying eyeball. Specify the iris to remedy this result.

**1** From the main menu, select **TOOLS** then **EYELIDS** then the **SPECIFY IRIS** tool.

**2** Specify the contours of the lash line with the eyelid outline pointer as described earlier in “Demonstrating Eyelids” and the pointer becomes an iris outline. A move pointer appears inside the iris outline.

**3** Tap and drag the iris locator with the Move pointer so that it covers the iris and tap the pen. A cross hair appears inside the iris outline as you do this.

**4** Move the pointer outside the iris and resize pointers appear. Tap and drag with a resize pointer to resize the outline if needed then tap the pen.

**5** Move the pointer outside the outline until it becomes a check mark and tap the pen;

Or

**6** Press the pen’s side button to cancel the iris specification and start again.

Now that the iris is specified, you can open the eye with the green open eyelid outline.

**Adjusting eyelid color** After you place an eyelid template, you can adjust the color of the template to match the rest of the picture.

**1** Apply an eyelid template to the picture as described earlier in “Demonstrating Eyelids.”

**2** Press the pen’s side button to open the Eyelid menu and select the Adjust eyelid color tool.

**3** From the Adjust Eyelid Color dialog, tap and drag the slide bars to adjust the eyelid color, brightness and template intensity. (Hint: To save the settings for future use, select Save settings on close.)

**4** Click CLOSE;

Or

**5** To cancel the changes, click RESET, then CLOSE.

## CHAPTER 4

# Breast Module

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The Breast Warp tool is used to simulate breast augmentation. The *Breast* module also includes the Copy and Clone tools. Please see chapters 1 and 2 for information on Copy and Clone.

### 4.1 THE BREAST WARP MENU BAR

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**View menu** **Compare** – Transforms a modified picture from its original to edited version with a movement of the pen.

**Side-by-Side** – Places the original and adjusted pictures next to each other.

**Method** – Shows Compare or Side-by-Side view in normal or embossed mode.

**Layers** – Opens a dialog through which you can show or hide layers of information associated with a picture.

**Whiteboard** – Allows you to draw nondestructively on the active picture.

**Shape menu** This menu contains the standard Shape tools (see Chapter 1, “Shape Tools”).

**Draw menu** This menu contains the standard Draw tools (see Chapter 2, “Draw Tools”).

**Tools Undo** – Removes from the picture any edits made since the last save or since the tool was activated.

**Save** – Saves the edited picture to the gallery. To save the edited picture to the patient’s chart, select **FILE** then **SAVE PICTURES** from the main menu.

**Fade** – Blends the selected edit and the original picture with a move of the pen to soften edits.

**Resize from Center** – Resize the breast relative to the center, rather than to the corner or side opposite the pointer. (This option is off by default.)

**Resize Proportionally** – Maintain the aspect ratio of the breast as you resize it. In other words, height and width change equally. Remove the selection to change height and independently. (This option is off by default.)

**Protect** – Activates the nipple protection feature used to prevent the nipple and areola from getting enlarged along with the breast. (This option is on by default.)

**Auto Flip** – Activates the auto flip feature, which automatically creates a mirrored copy of the enlarged breast for use on the opposite side of the body. (This option is on by default.)

**Shadow** – Adds shadow to the breast after it is warped and sized to increase perceived volume increase. (This option is on by default.)

### 4.2 USING THE BREAST WARP TOOL

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- 1** Select or open a pre-op image (front view) of a potential breast augmentation patient.
- 2** Select **BREAST WARP** from the **TOOLS** menu.
- 3** Select the desired options (**PROTECT**, **AUTO FLIP** and **SHADOW**) on the Breast Warp toolbar.
- 4** Using the pen and tablet, circle one breast.
- 5** Tap in the center of the nipple-areola. If the Protect option is turned off, proceed to step 7.
- 6** If the Protect option is turned on, move the pointer until the entire nipple-areola is encircled, then tap down.
- 7** Move the pointer up and down until the desired degree of volume warp is achieved, then tap down. A blue selection box appears around the breast.
- 8** The breast may now be resized and repositioned as if using the Resize tool (see Section 1.4).
- 9** Optional: If the Protect option is turned on, you may reposition the nipple-areola. Move the pointer over the protected area. The cursor changes to a hand with a circle around it. Tap once to pick up the area and move it as desired. Tap down to place in the new position.
- 10** Tap outside the selection box with the paste cursor. If the Shadow option is turned off, proceed to step 12.
- 11** If the Shadow option is turned on, move the pointer up and down to adjust the amount of shadow, then tap down.

**12** If the Auto Flip option is turned on, a flipped copy of the breast appears. Position the second breast, then tap outside the selection box with the paste cursor.

**13** If necessary, use the Erase and Blend tools to clean up the area surrounding the breasts.

**Auto Flip** When the first enlarged breast is placed in position, the Auto Flip feature automatically creates a reflected copy of the breast that may be used for the other side of the body. By default, this feature is active.

If you do not wish to use the reflected copy for a particular patient, you may discard it by clicking the pen's side button twice. (The first click makes the blue bounding box appear, the second click discards the flipped image.)

If you don't usually use Auto Flip, click the **AUTO FLIP** button on the Breast Warp toolbar to turn off this feature. The software will remember this setting the next time you use the Breast Warp tool.

**5.1 SIMULATING HAIR RESTORATION**

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The Graft tool is used to simulate the results of hair restoration surgery. The tool includes a library of hair graft images taken from various viewing angles that may be placed on the image of a surgical candidate. Size and shape of the graft may be adjusted to the patient's head, and hair color is matched automatically.

- 1** Open the desired patient image(s).
- 2** From the **TOOLS** menu, select **HAIR**, then **GRAFT**. The Graft Menu bar will appear.
- 3** Circle one or more areas of the patient's existing hair to sample the color.
- Select a graft** **4** Click inside a selected region. The Search for Hair window will appear.
- 5** Locate an appropriate hair graft. (Note: You may enter data into the search fields to show only a portion of the graft library.)
- 6** Click on a hair graft image to select it. The Search for Hair window will close and the selected graft will appear inside a blue bounding box floating over the patient image.

**Move the graft** **7** Click anywhere inside the blue bounding box to pick up the graft. Move the graft to the desired position and click again to place the graft. Repeat as needed.

**Resize the graft** **8** Make sure the RESIZE FROM CENTER and RESIZE PROPORTIONALLY buttons on the menu bar are both deselected.

**9** Move the pointer along the outside edge of the blue bounding box. The pointer should change to an arrow.

- Along the top and bottom edges, up-and-down arrows appear for vertical resizing only.
- Along the left and right edges, left-and-right arrows appear for horizontal resizing only.
- At the corners of the box, diagonal arrows appear. Use these to resize the graft in both dimensions simultaneously.

**10** Click once with an arrow pointer to pick up the edge of the bounding box. Drag the box to the desired size and click again to release it.

**11** Repeat steps 8 through 10 as needed.

**Adjust the graft** The Adjust Graft tool allows you to make final adjustments to the hairline and the edges of the graft.

**12** Select ADJUST GRAFT from the SHAPE menu. The menu bar will disappear and the pointer will change to a small dot.

**13** Click once on the area you wish to adjust and drag to make the adjustment. Click again to keep the adjustment or right-click to cancel the adjustment.

**14** When you have made all desired adjustments to the graft, right-click to return to the Graft tool.

**15** Optional: To adjust the graft color, select **SAMPLE FROM PATIENT** from the **COLOR** menu. Circle one or more areas of the patient's existing hair and click inside one of the selections.

**Paste the graft 16** When you are satisfied with the size, shape and placement of the hair graft, click outside the bounding box with the **Blended-** or **Hard-Edges** pointer to paste the graft on the image.

**17** Move the pointer up and down to soften the edges of the graft. Click when the desired degree of softness is achieved.

## 5.2 MEASURING HAIR DENSITY

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Density analyzes close-up scalp images and counts hair roots in a given area (lense aperture) to calculate hair density. Using Density, you can calculate density in the patient's donor/recipient region and track the survival of hair in the grafted area.

## 5.3 SIMULATING HAIR LOSS

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The Alopecia tool is used to simulate hair loss. This tool allows physicians to demonstrate to patients what they might look like if they allow their hair loss to continue without treatment.

**1** From the main menu, select **TOOLS** then **RESTORE** then **ALOPECIA**. The scalps palette appears.

**2** From the palette, select the appropriate Norwood Scale value for the image. Templates matching this value appear in the palette.

- 3** Select a template and it appears on the image.
- 4** Drag the template with the move cursor to align one side of the template with the image.
- 5** Adjust the scalp by dragging the template lines with the multidirectional pointer:
  - Align the red grid line with the outer edge of the scalp.
  - Align the green grid line with the outer edge of the hair.
  - Align the blue line outside the hair's edge.

As you adjust the grid lines, the template appears transparently over the original image, allowing for accurate placement.

- 6** When you are satisfied with the placement of the template, tap or click with the Blended- or Hard-Edges pointer to paste the template on the image.

## **APPENDIX A**

# **Risk Management**

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The key to effective risk management is communicating with your patient about realistic results. We strongly encourage you to use your Mirror system to enhance this discussion, in addition to other generally accepted procedures. The primary value of the Mirror system's visual presentation is its ability to clarify both your and your patient's expectations.

## **A.1 ELECTRONIC SIMULATION AND RISK MANAGEMENT**

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The introduction of computer-based simulations for pre-operative evaluation of facial deformities has created a great deal of interest among surgeons who perform elective aesthetic surgery.

Electronic simulation, when used appropriately, can be an extremely effective risk management tool. It can give the surgeon an accurate idea of the patient's expectations, and can give the patient a comprehensible image of the procedure's limitations and range of possible outcomes.

However, as with any form of visual communication, your system must be used wisely. When simulating potential outcomes, it is advisable to depict results that fall somewhat short of an "ideal" outcome. It is also

important to stress to patients the uncertainties involved in the surgical process that make any computer simulation only a rough approximation of actual post-operative appearances.

For those who use electronic simulations in their pre-operative consultation, informed consent is critical. We strongly recommend the use of an effective disclosure document that applies specifically to the procedure in question. This consent may be obtained through Canfield's Confirm program or through a signed document in electronic or written form placed in the patient's record.

Increasingly, claims are being filed based exclusively on failure to provide complete disclosure. Without signed documentation, the consent process, regardless of how thorough, can be useless.

**A.2 SAMPLE ELECTRONIC IMAGING DISCLAIMER**

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Dr. \_\_\_\_\_ has shown me proposed surgical alterations of my \_\_\_\_\_ on an electronic imaging system.

I understand that the alteration of these images is purely for the purpose of illustration and discussion.

I understand the outcome of the surgical procedure and appearance of any scars is directly related to my individual healing characteristics.

I understand that because of the significant differences in how living tissue heals, there may be little similarity between the electronic images and my final surgical result.

I certify my understanding that there is no warranty expressed or implied as to my final appearance by the use of these electronically altered images.

\_\_\_\_\_  
Signature (patient)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature (witness)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature (physician)

\_\_\_\_\_  
Date