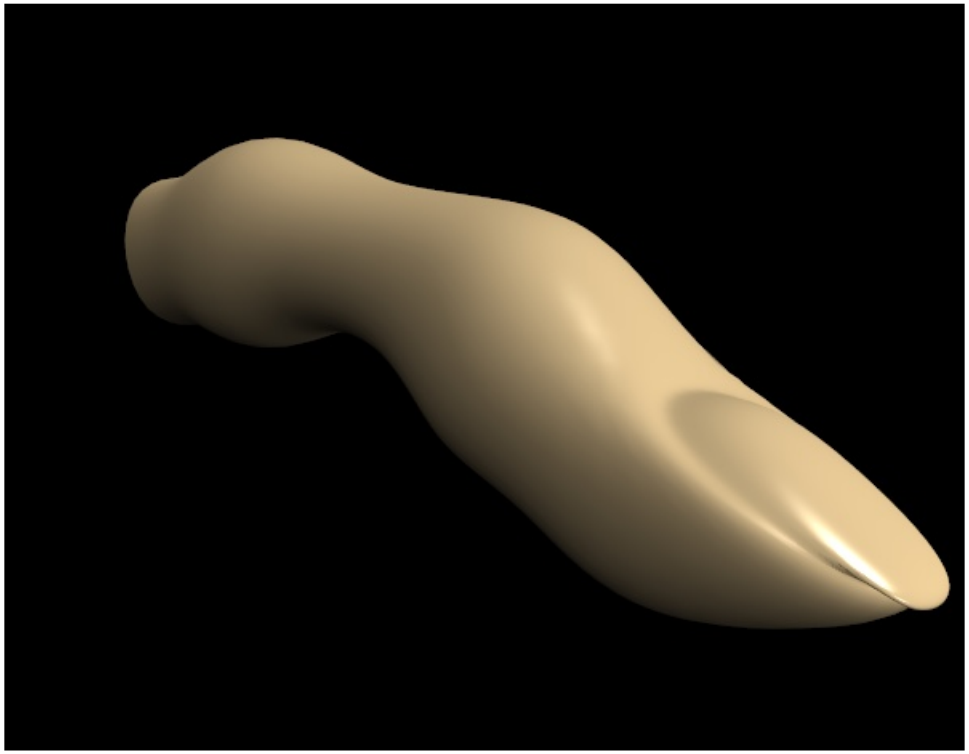

Subsurf modelling

This tutorial will show how to model simple organic shapes using Subsurfs. A finger with nail will be modelled using only a few extrude operations and some scaling and moving of vertices. Subsurfs are very handy because complex models can be built up very quickly. They can have holes in the mesh and can also be easily joined together. So body parts can be built seperately and then joined together into a final mesh. Subsurfs also deform well when using bones.

1. Add a cube. Select one end and extrude out six times. You should have seven divisions now. See Figure 1.

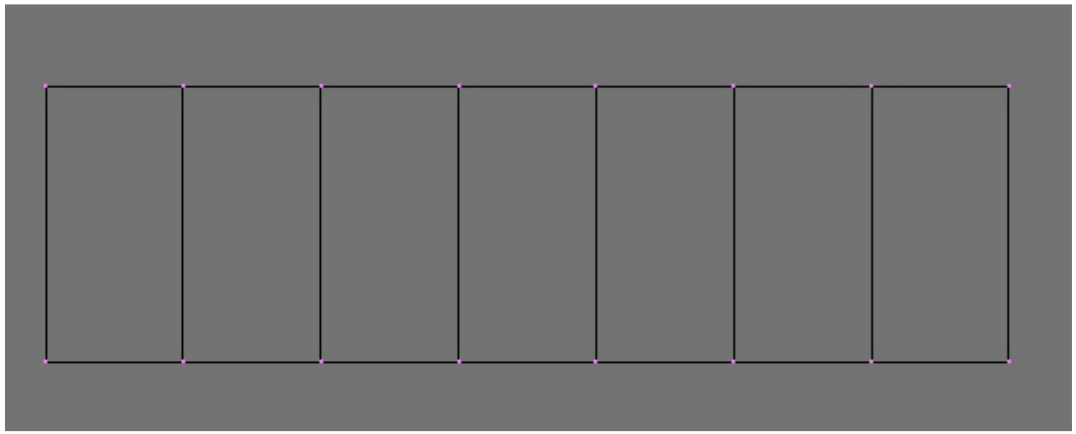

Fig 1. Six extrusions of one end of a box

2. Go to the mesh edit buttons F9 and press the subsurf button. Then change the Subdiv to 2 instead of 1. The mesh has changed into a subdivison surface. As the number of subdiv increases the mesh will get more detail. The subsurf mesh is visible as a fine gray. By leaving edit mode the subsurf mesh is displayed like any normal mesh. The mesh is adjusted by moving the vertices around. These can be thought of as like control points for the subsurf mesh.

TIP: Toggle between solid and wireframe views while modelling with subsurfs. The development of the mesh can be seen quite clearly in solid view but in wireframe view vertices can seen and moved easier. Everyone will have their own preference on how they like to model.Use the Z-key to toggle between the two views.

3. Select all the vertices on one end and press X-Key. When the dialog box comes up choose delete face at that end. This is the start of the finger where it goes into the hand. This also demonstrates one of the great things about subsurfs... that the mesh can have holes in it.

4. By selecting points and moving them around you can shape your mesh. So go into top view (Numpad 7) and adjust points so you have something that looks like Figure 2. Try to think of this like sculpting clay... or pulling a mesh into shape. It is no good saying move vertice number x to point x,y,z. Just move things around until it looks right.

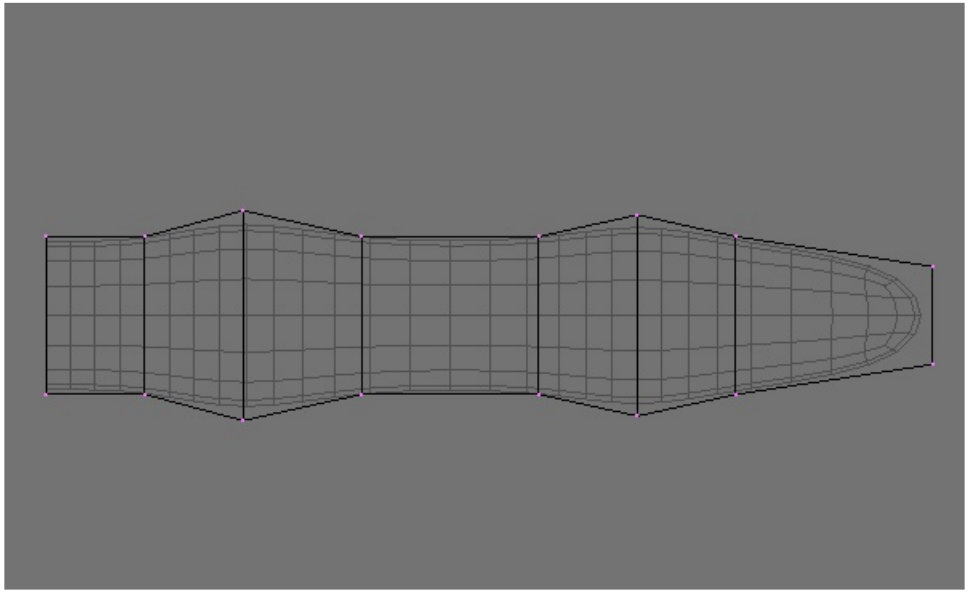

Fig 2. The top view of the beginning of the finger. You want two knuckles and then a narrow part in between where the bones are.

5. Now go into a side view and do the same thing again, just trying to get a shape similar to Figure 3. You can always look at your own finger for guidance. Just pull and tweak the vertices until it looks right.

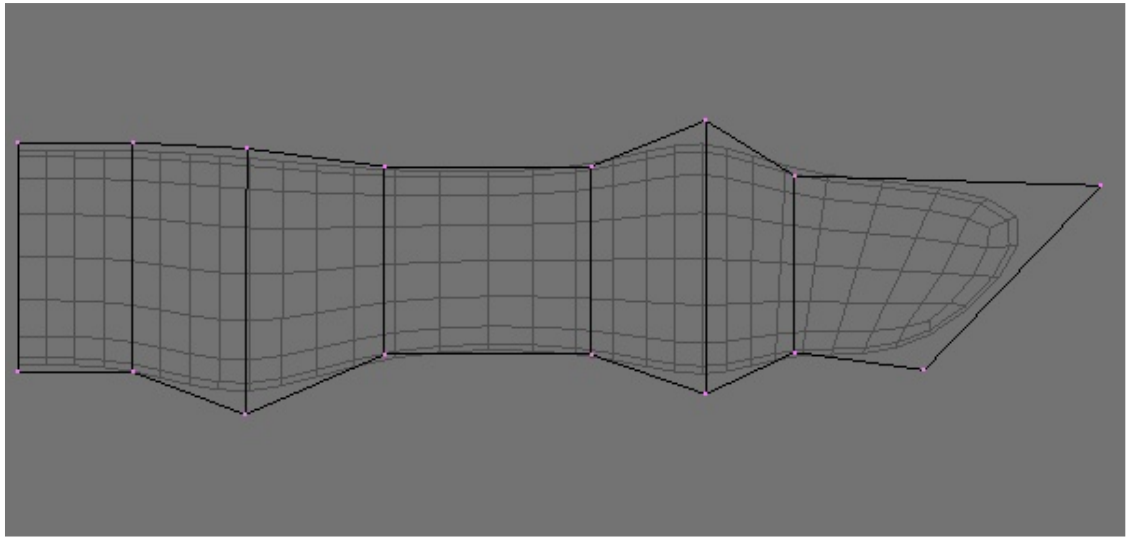

Fig 3. The side view of the developing finger. Drag vertices down where muscle is and start shaping the tip of the finger.

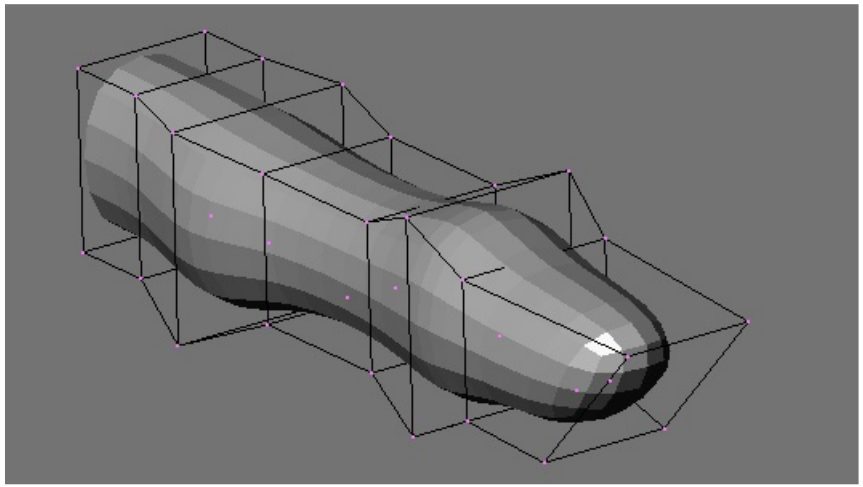

Fig 4. The finger is starting to take shape.

6. Now by selecting sets of vertices and rotating and moving them, make the finger curl over a bit. After curling over you will have to adjust different vertices so that you can achieve the look of the muscles and also the knuckles. Look at your own finger for a reference. See Figure 5.

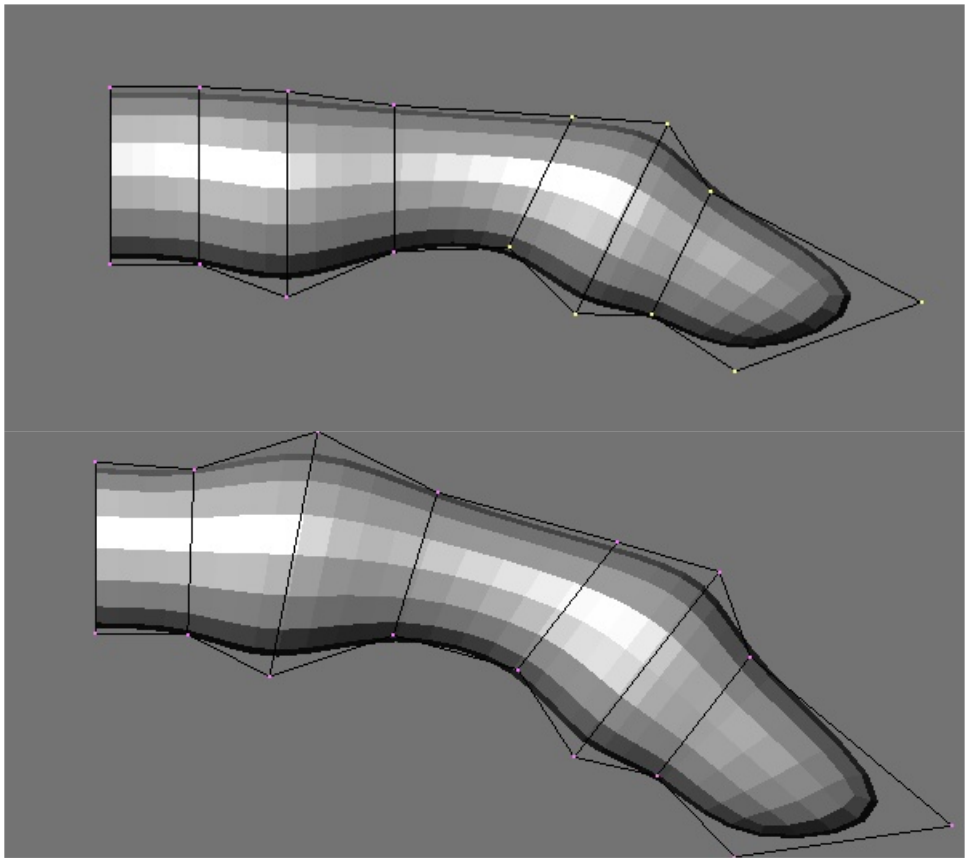

Fig 5. By selecting vertices and rotating them you can curl the finger. Here the front half is selected and rotated over. They then need to be moved using the grab tool G-Key until they are in the right position. The lower image shows the final result.

7. Time to make a fingernail. Select the vertices at the front where a finger nail would be and extrude them. See Figure 6. Scale in a bit and then extrude once again. See Figure 7. Now in the side view move the vertices around until the finger nail starts to take shape. Have a look at your own fingernail for a reference. The finger slopes gradually down but the nail itself has a small bulge upwards about one third down the nail. By adjusting vertices you can also create the indented look of the nail. See Figure 8.

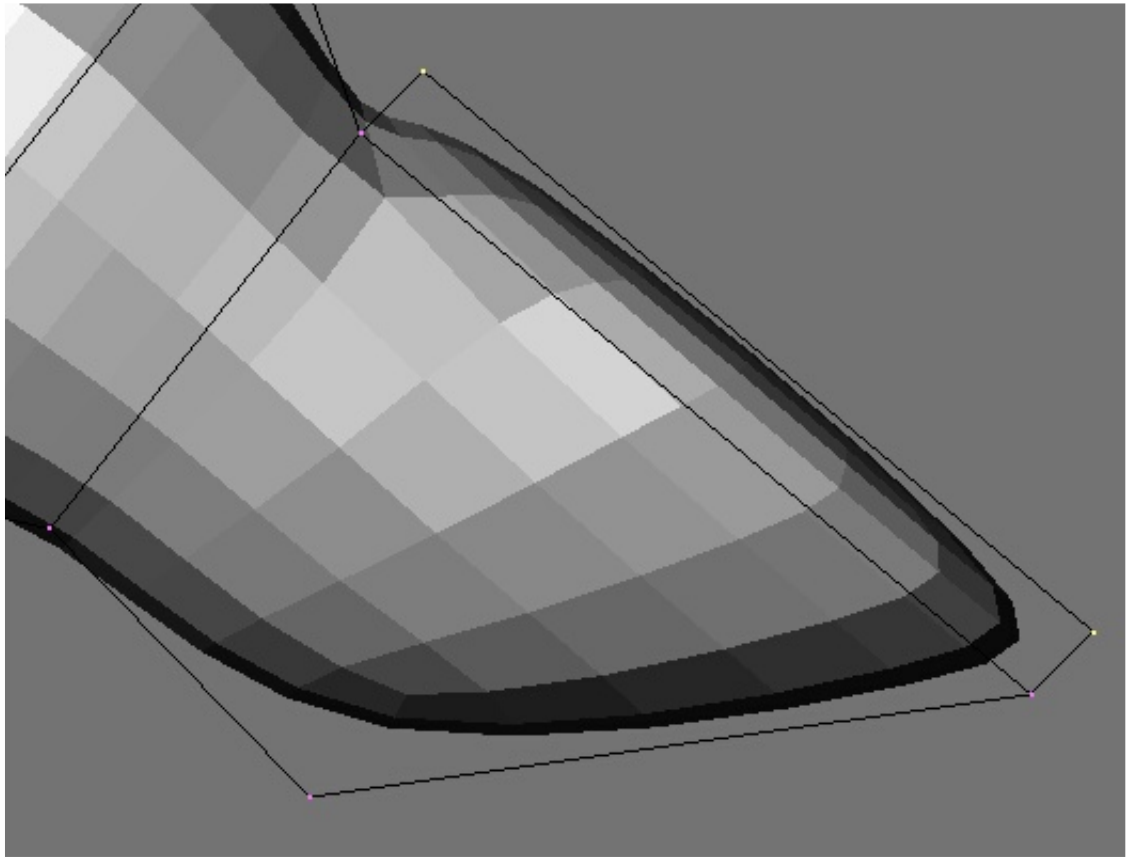

Fig 6. The first extrude at the tip of the finger.

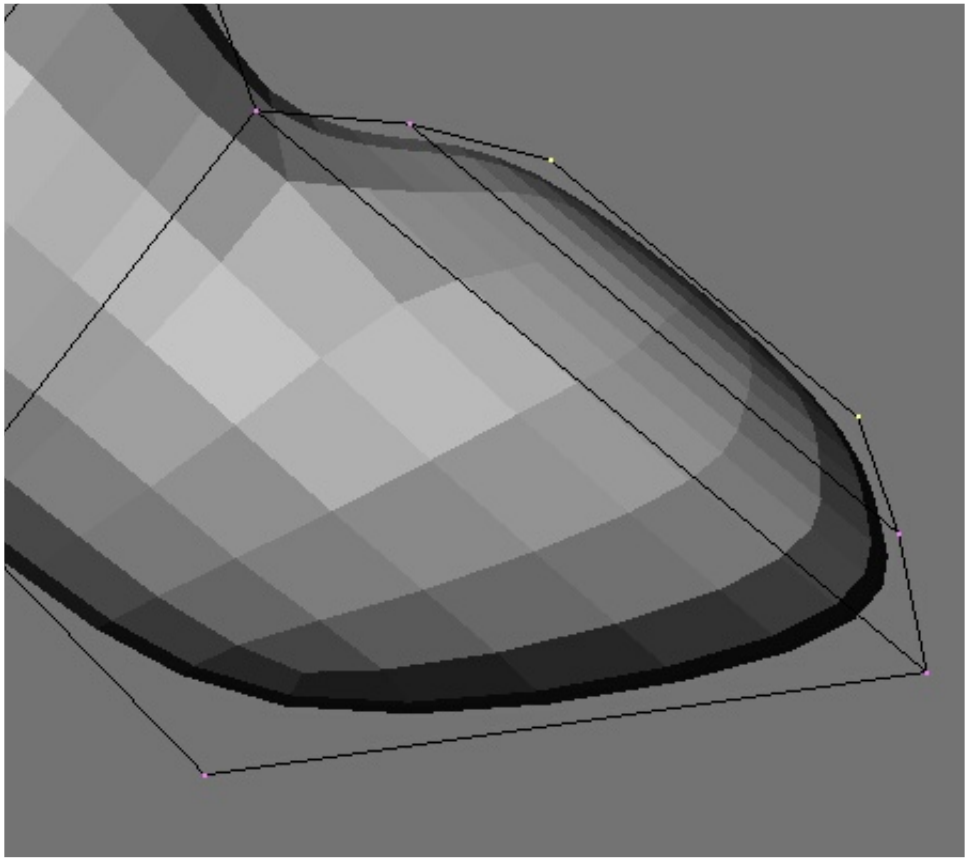

Fig 7. The second extrude operation. Scale in a bit more to start developing the shape of the fingernail.

TIP: You add detail in subsurf modelling by extruding new faces out. Use extrude, scale and rotate operations to build your mesh. With more experience you can quickly build very detailed objects. The closer you have these faces the sharper the crease is. Be careful to start your modelling with enough vertices to model but not too many. With too many vertices it gets difficult to select and move individual points. It' s better to start big and gradually add detail.

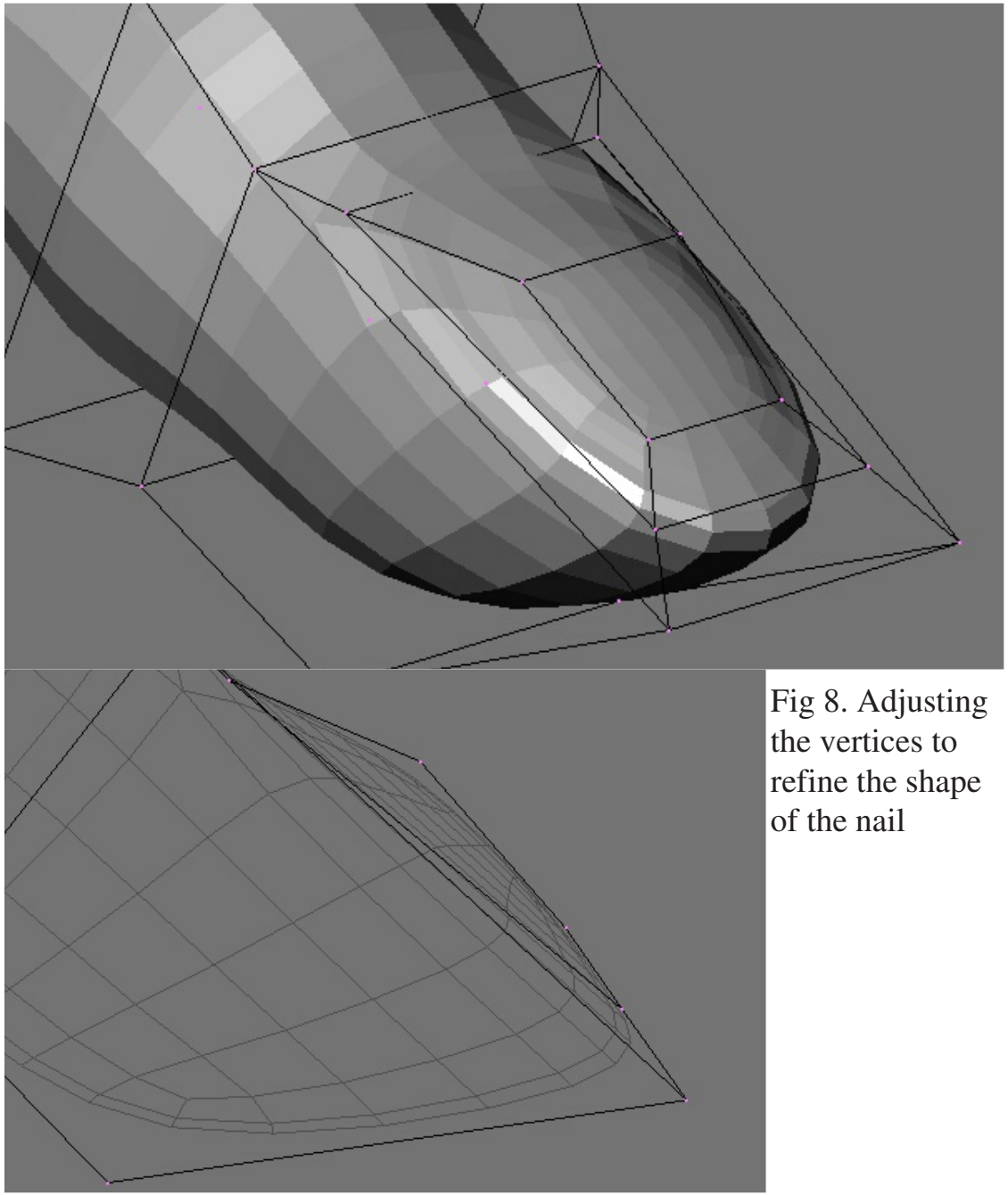

Fig 8. Adjusting the vertices to refine the shape of the nail

8. Select the front four vertices of the nail and extrude. This creates the nail hanging over the end of the finger. By changing how this looks you could make all kinds of different character hands. For example, keep extruding out and scaling down to make sharp claw like finger nails. Just continue tweaking until you find something that you like. See Figure 9.

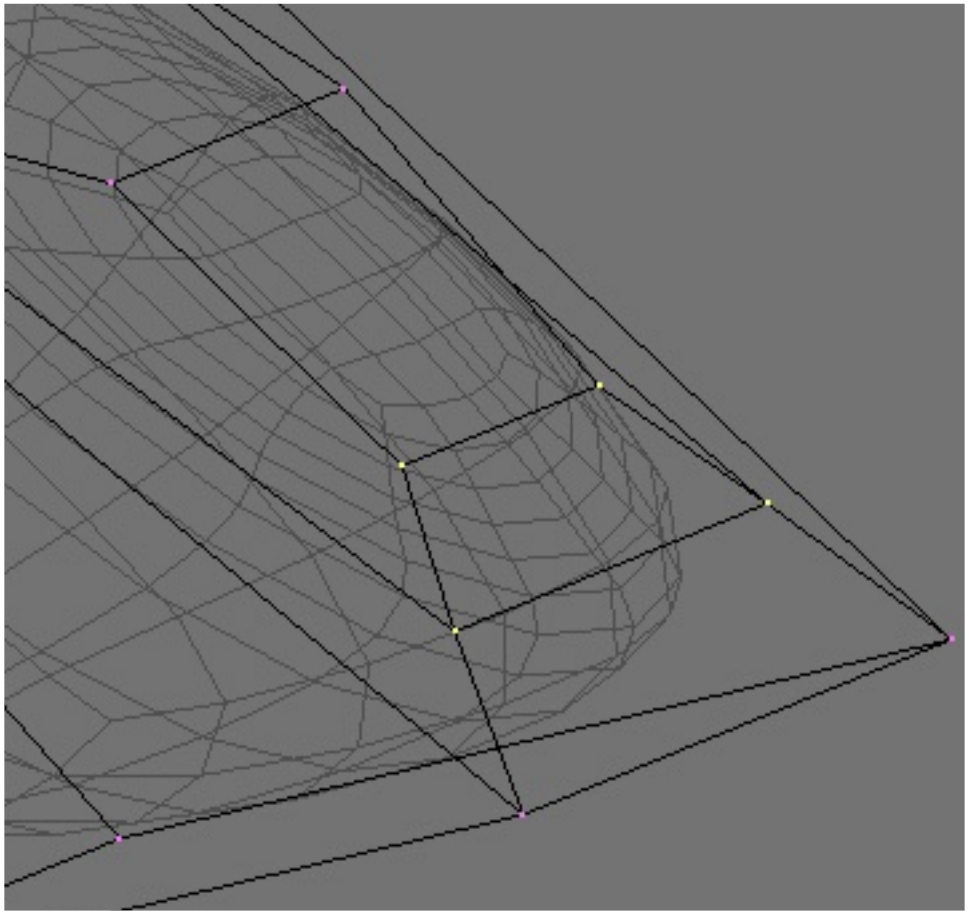

Fig 9. Extrude this face out to create the fingernail. Tweek the shape of the nail to suit the character.

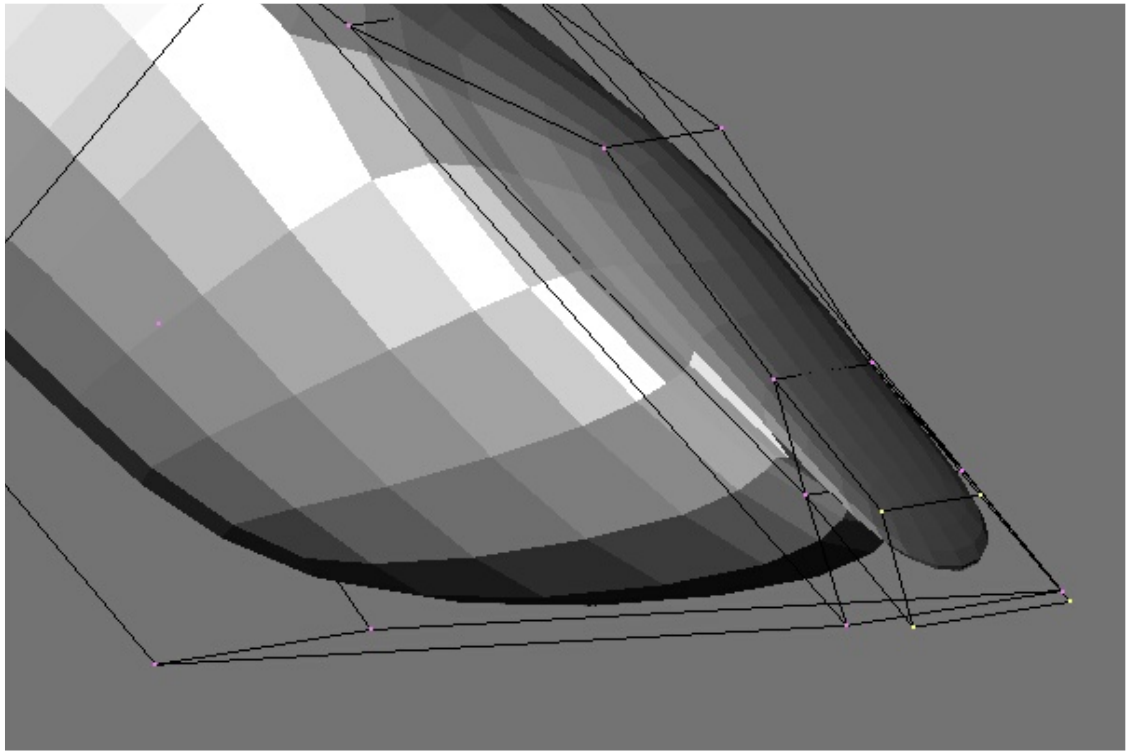

Fig 10. The extruded nail.

9. Select all the vertices A-Key and press the smooth button found in the edit menu F9. Increase the subdiv number to 3. Tweak the final mesh to your liking.

Going Further: You can try and build up the rest of the hand. Just duplicate the finger a few times...scale to required size and then start building faces and joining together into a hand. Build faces using F-Key. It is possible to create much more detail. Try making the finger nail have more depth. Maybe extrude the two sides out a bit and then move them down to push into the flesh. Add some bones and IK and test out the deformation