

Client Interview Questions:

Mechanical

What is the tolerance on the thickness of 3 mm?

What type of material do you want for the final device?

How long is your average surgery? Or use of this tool? (ergonomic considerations)

Max would be around an hour

Electrical

What speeds do you currently utilize and what ranges of speed are you looking for? Should it be a spectrum to ramp up and down the speed at will or should there be predetermined speed settings to choose from?

If the device is hand-held, is it powered by a socket (110v) or a battery or a power supply?

How many buttons do you need to control the system (Specific, such as speed power, suction cup, knife, clip, lens)

What do you think of foot controls as opposed to trigger controls?

Biological / Design

What is your primary method of sterilization? Should the shavers be autoclave-able or disposable? Do you have a preference?

Should be autoclavable; **will inform us of sterilization**

Disposable heads

Would you prefer a device that is compatible with current shaving handles or do you want us to design a handle?

The shaver is the absolute necessity, a complete instrument would be ideal. Should contain a shaving head a shaft a motor and a drive shaft. Depends on the size of the motor we can design.

Handle that has motor.

Shaft, drive shaft, shaver

What do you prefer between dual action and random orbital?

Up to us with level of difficulty

How do you want our design to differ from or relate to current available products?

Be able to make inexpensive but last longer

How large of a device are you looking for? i.e., length of tool

Average length of tool is the one given but longer shafts would be better

What is the typical size of debris that is produced in these types of surgeries?

Size of instrument head

How much force do current suction units provide? Do you currently utilize suction during surgery?

Suction on the shaver

Suction is based on pumps and control over inflow and outflow

Could we observe a surgery in which you use this equipment?

1-2 people at a time for knee surgery

Do different types of injuries/surgeries require different types of tools? Different shapes needed for different surgeries? Is this mainly for bone and cartilage use? Is there a difference in size of equipment needed for these two materials? Or rotor speed differences? Any other things to consider?

“Barber instrument” - cut the hair

“Meniscal Shaving Device” - Meniscal cartilage - soft rubber and fibrous

“Softer cartilage” - more abrasive

“Bone smoother” - less likely to climb, easier to control

General

What are you envisioning the final product to look like? Just the inserted shaver? Whole instrument? Whole electrical control system?

People have variable sizes of joints, do not want to harm the cartilage area on the knee.

Design the shaving piece of the instrument, easy for the surgeon to use.

Comfortable, easy, obvious and hard to make mistakes with it.

Common mistakes: Having the tool on and getting hand bumped, moving the knee, no parts breaking off inside the knee.

Fluid moves in the knee moves in the knee, must be sturdy, disposable around 10-20 uses, usable materials same materials in different ways.

Chondromalacia; can't do anything for worn surface on smooth surface. One uses would be smoothing down the worn side.

Tear cartilage in the knee induces an immune response which causes fluid to flood the knee.

Not a one to one relationship between visible damage to the knee and pain. What can we effect in the knee without putting in metal/plastic? We can remove the debris in the knee.

Orbital disk sander, motor driver, gears, perpendicular shaft. (example) dental tools are a good example because they use disks.

Random orbital or dual action sanding head.

Articular cartilage how to smooth down the layers.

Fluid in arthritic knee is like water; lack of **peptidoglycans**

Doesn't have to be any shape.

Account for shoulder as well same tolerance and same indications

Buttons for forward, reverse, 2000 rpm

Bone cutting drum 4,5,6000 rpm

Controlled in motor box for it

Gun preferably for speed controls – preset or continuous is fine

Are you wishing for a working product at the end or just a prototype?

Our best effort; realistic to have a working product

Animal knees for testing

Ideally have a battery in it

What are the must-have specifications for this project?

Waterproof

Thinner is better

4mm

Different cutting heads, hard vs. soft surfaces. Something super sharp for the softer surface

What are the extra preferred specifications, if possible?

What do you think this product needs to make it a very marketable alternative?

What impact do you think this product could have on orthopedic surgeons and patients?

Total knee replacements are not practical. Want functionality without pain, This is a different option to a total knee replacement for individuals who are too young to have that kind of operation.

How involved do you want to be in this project? How often would you like to meet face to face?

(808)-896-3274 Phone Number

Likes Bucers; We can reserve rooms

More involved the more likely we are to succeed. He can meet however often we want to.

Can talk about anatomies of the knee

Is the budget firm of \$3000?

Within reason we can adjust to meet the final goal.

For us:

Study anatomy of the knee and shoulder

Send papers regarding articular cartilage hierarchy

Send papers regarding bone mechanics

Product specifications sheet

Send tissue cheat sheet

Organize these answers