

Chronic Total Occlusion (CTO) Treatment Device Project

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Contents

I. Introduction

- Background Information
- Market of CTO treatment

II. Product Planning

- Customer's Needs
- Vision & Mission Statement
- Conceptual Design

III. Project Schedule



Introduction

Quiz : What's in common among them??

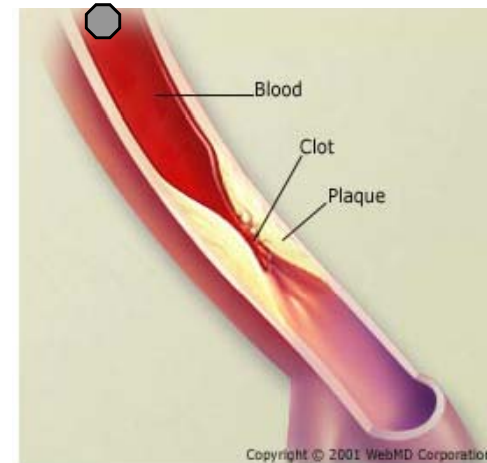
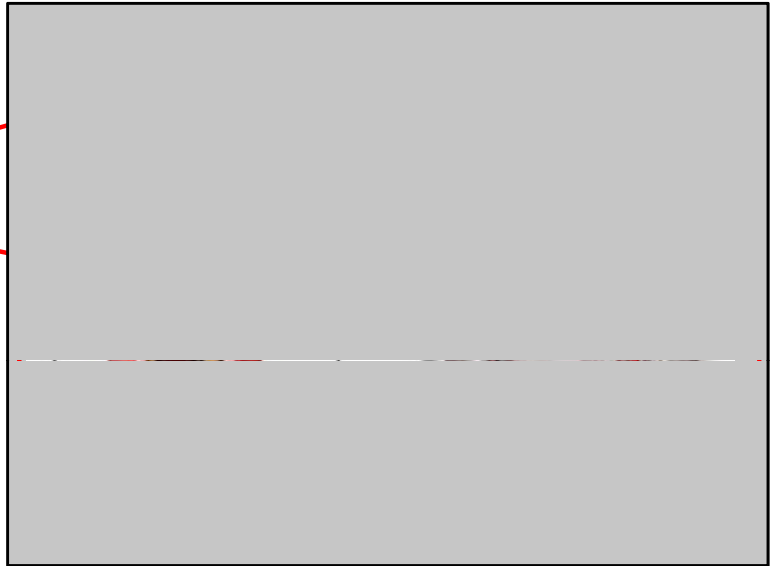
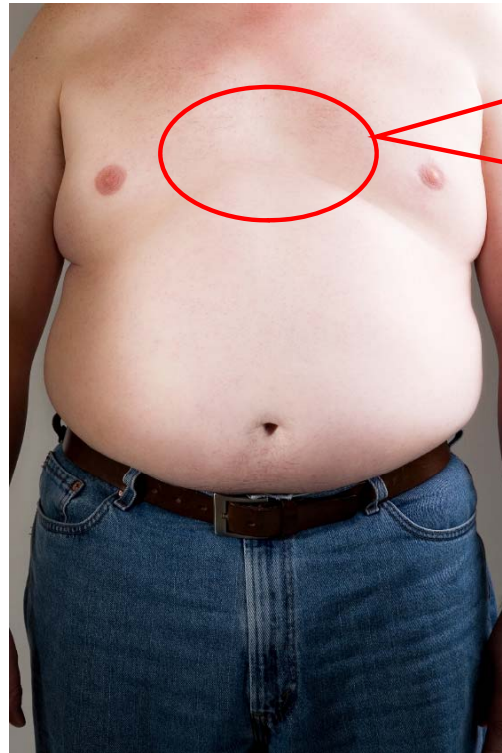


**Answer : They were died from Heart attack caused by
Cardiovascular Disease!!**



Introduction - Background Information (1)

- What is Cardiovascular Disease??

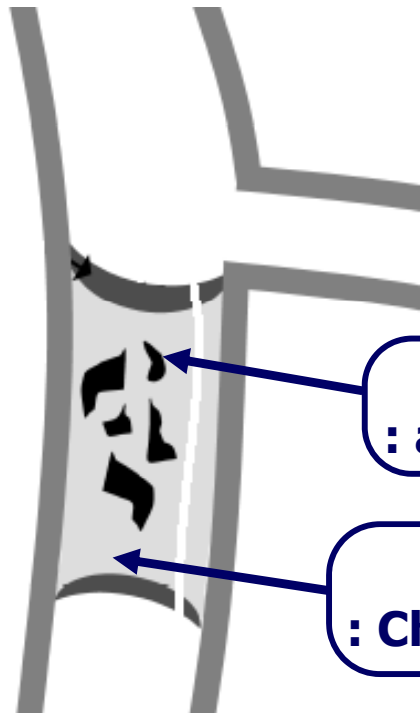


The number 1 cause of death and disability in the United States and most European countries.



Introduction - Background Information (2)

- **Chronic Total Occlusion (CTO)**



Calcified Deposit
: as hard as Fe or Ni

Intimal Plaque
: Cholesterol, fibrous tissue



The surgery success rate for ordinary cardiovascular disease : 95%

However, in the case of CTO : **less than 60%**



Introduction – Market of CTO Treatment

- **Total hospital costs for CVD treatment in 2008 : \$140.1 billion**
- **About 50% of severe CVD patients having CTO**

Prevalence of CVD in adults age 20 and older
by age and sex (U.S. 2008)

Percutaneous Coronary Intervention (PCI)
Procedures (U.S.)



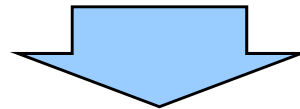
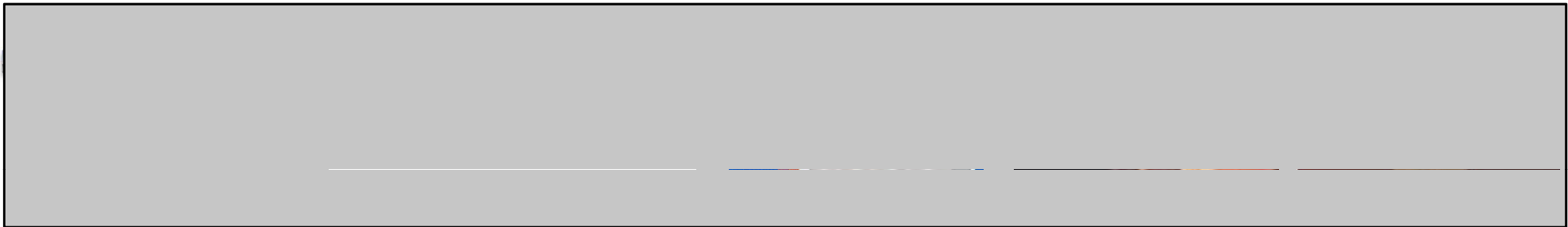
The Mean Charge of one PCI procedure in U.S. is about \$44,000!!



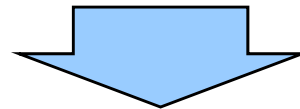
Product Planning – Customer's Needs

The Problems of Conventional CTO Treatment Devices

Guidewire Type Excimer Laser Type Ultrasound Type Abrasive Type Dissection Type



Causing perforation or damage of the blood vessel while they remove CTO



Needs of a device with centering ability



Product Planning – Vision & Mission Statement

- **Vision Statement**

- Develop a safe, effective CTO treatment device with centering ability

- **Mission Statement**

Product Description

- Effective CTO treatment device with centering ability for least damage of blood vessel

Key Business Goals

- Being the safest procedure among the CTO treatments procedures
- Capture more than 50% of primary market

Primary Market

- University medical centers or major medical centers

Assumptions and Constraints

- New centering technique avoiding blood vessel damage
- Effective procedure to remove CTO
- Safety concerns are the priority

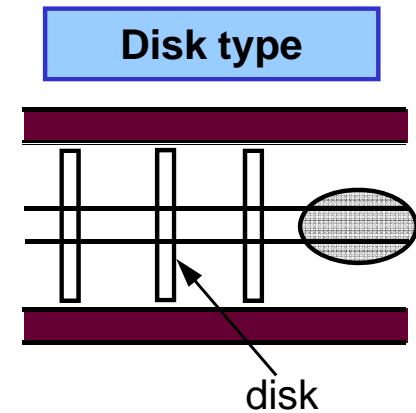
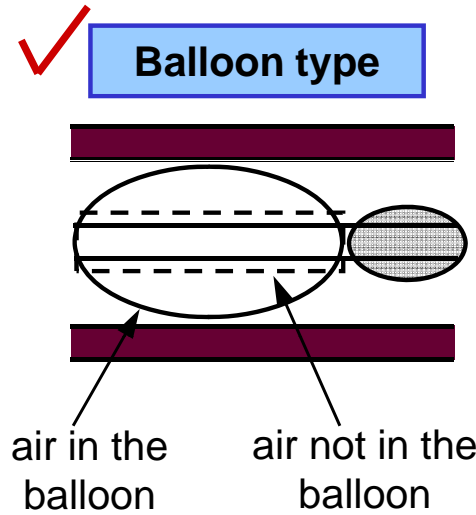
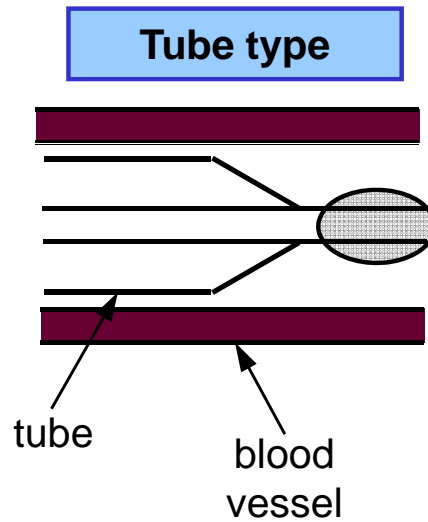
Stakeholders

- Medical surgeons, physicians, patients
-



Product Planning – Conceptual Design (1)

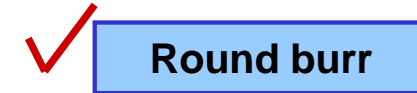
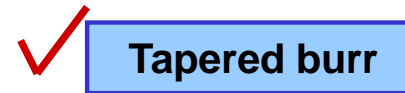
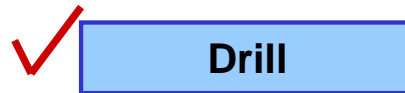
Centering :



Actuator :



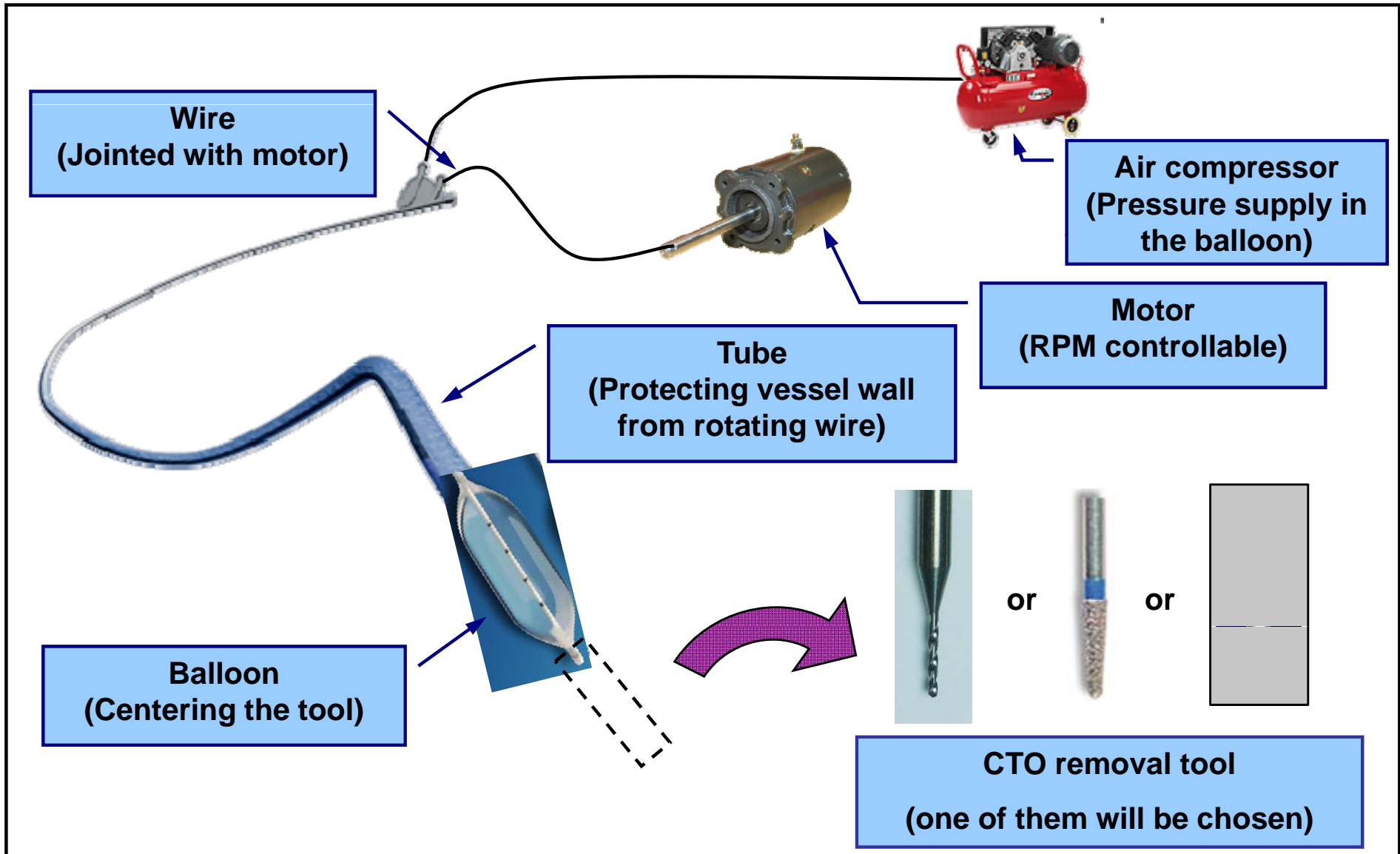
CTO removal tool :





Product Planning – Conceptual Design (2)

The Conceptual Design of CTO Treatment Device





Project Schedule



Project Schedule Table

Plans	Mar	Apr	May	Jun	Remarks
Basic Research					Functions of parts
Detail part design					Specifications
Developing components					Buying or manufacturing parts
Assembly & fabricating prototype					
Test					Final Presentation



Seoul National University

THANK YOU