

# Design for Medical

## Integrated Intelligence for Medical Product.

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Abstract: In the territory of a medical product, there are no great variation and improved for recent 50 years. I have solved the question of the difficulty of using of medical equipment, and the lack of features of an instrumental by a medical doctor's strive. As one example, the "laryngoscope" which is performing the novel exploitation is an exist. This is a tool for developing the larynx in tracheal gill intubation. Unless a grip strength is strong, I cannot grip the grip part of the laryngoscope by which the presently use is carried out. A-lot-of problem is an exist to an operativity in a texture or an organization again. And there is a problem also in use in a dark place. This is a typical example of the medical equipment which has conquered the question by a medical doctor's strive. I think that I can carry out the design planning of the easy-to-use medical instrument by designing a medical doctor's hand, a patient's pars laryngica, and the relationship of a laryngoscope. A bone, a muscular, a tendon, etc. which are building the human body do not restrict a future medical equipment planning. I could send the pharmacon into the depth of the lung effectively via the lung with the novel nebulizer which made the possible the pharmacon expansion in a novel human body by conducting the fluid analyze in a respiratory tract or a lung. Moreover, in order to correspond to the newborn baby who gets a uranoschisis, I analyze the uraniscus of the foetus of an antenatal by using magnetic resonance image etc., and I also think that I can design an effective palatal plate. When a designer, a medical doctor, and its three persons cooperate with an engineer, it is a consider that it is possible to obtain a novel vision and a goal. When the medical doctor expert in a medical, the engineer of an engineering thought, and each power of the designer who can imagine an artifact are unified by the novel exploitation procedure, it is a suppose that I can create an advanced human being's medical environment. In order to slip out of the state of the present medical equipment, to develop a novel instrumental and to begin to make the comfortable future, three persons' co-creation is required.

**Key words:** *Laryngoscope, Medical Instrument, Lung, Nebulizer, Air, Flow*

### 1. Introduction

In the territory of a medical product, there are no great variation and improved for recent 50 years. I have solved the question of the difficulty of using of medical equipment, and the lack of features of an instrumental by a medical doctor's strive.

## 2.1 Research Goal

I will compare 50-year before and, as for a presently, the rise in a female medical doctor is an exist.

It is necessary to improve a laryngoscope also from a burden being heavy to the medical doctor of the woman in which force is weaker than a man's medical doctor. A hand is an important physical interface which connects a human and device. In this study, I perform an optimum planning of the grip part of a laryngoscope by considering the relation between a human and goods through a "hand" and a "device."

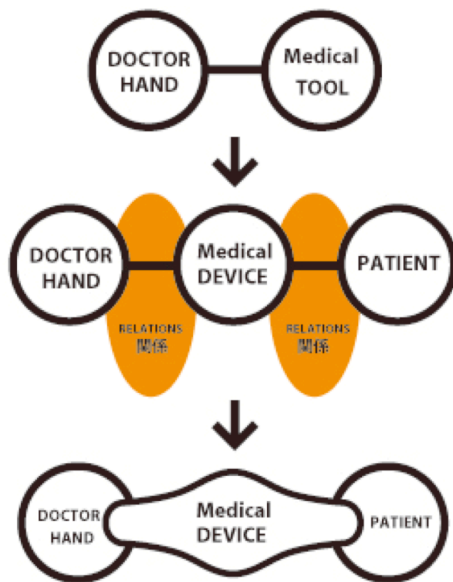


Figure.1

After a wind-pipe tubage carries out the elevation of the operculum laryngis using a laryngoscope, usually performs a larynx expansion and secures a respiratory tract, it is the one way of the airway management which intubates a patient's wind-pipe in a tracheal tube, and supplies an oxygen. Sternum prelums (resuscitation of heart

etc.) and an asynchronous evocation are possible by a positive airway management for the purpose of an aspiration prophylaxis in a splitting of a respiratory tract and an oesophagus.



Figure.2

### 2.3 The trait survey of a grip part

As the point of a grip controllable in a stable appropriate grip strength or the way to operate,

- (1) In order to move a device and a tool and to carry out the action as an intention, it is the form which had a relationship with the hand to which I can apply proper and required force.
- (2) I can perform a transmit of proper force.
- (3) There is (relation between a device and a hand) for being controllable also in what kind of way From these three viewpoints, I investigate the form of a grip, and an action.

### 2.4 3D Sketch which uses a vesication urethane specimen

With the 3D sketch procedure, I consider a synergy of a solid sensitivity form and a functional form, and can begin to make the optimal style and design from repeating a planum sketch for a three-dimensional solid model before a perform.

Thereby, the prehension of the continuous surface form of the product which cannot be caught in a planum sketch was completed.

In this study, after repeating 3D sketch, I made the detail by planum sketch.

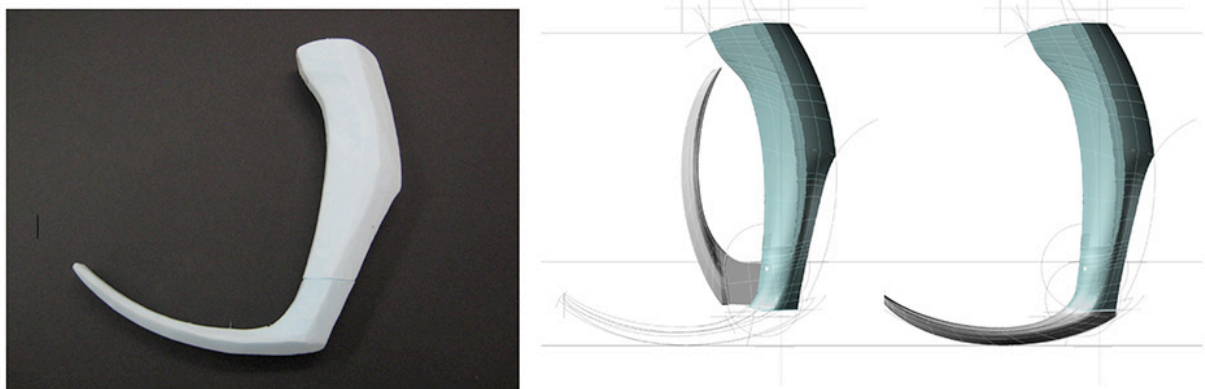


Figure.3

### 2.5. Metal trial production

In consideration of the hygienics of the laryngoscope which is receipts and payments, its waterproof organization, and semicritical instrument of units, such as a battery and a light source, I have arranged the battery and the light source in the grip part, and designed the texture where a dry cell was made as for an insertion to a smooth at the time of a dry-cell interchange, and the metal model trial production was completed. This consists of three parts of a grip part, a slide cover, and a cap.



Figure.4

### 3. Conclusion of Lalyngoscope

This study showed that I could perform the more nearly optimal planning by considering about the following points in a design planning of a laryngoscope.

A grip part is

(1) The control tend and before grasping, a crevice is between a grip and a vola manus.

- (2) When grasping, the wide side of a vola manus is in contact with the grip.
- (3) For a perform reason, an internal battery unit can take out a hygienics.
- (4) I shield so that a humor and a sanguis may not go into an internal unit,

In a blade part

A salient form is not making so that a topically prelum may not occur in the region which touches a tongue and the soft tissue of an intraoral.

- (1) The thickness of a blade is using less than 30 mm.
- (2) Use the resin material which can perform a high level disinfection.
- (3) It is an effective thing that the whole blade shines because of an intraoral observation.
- (4) Use a resin with a rigor a rigor is hard and transparent and a high transmittance of light.

I have proposed the novel laryngoscope model which carried out the design planning by this study.



Figure.5

#### 4. Examples Citations

[1] William A.Rutala HICPAC : Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008, Department of Health & Human Services USA