ABOUT OMICS GROUP

OMICS Group International through its Open Access Initiative is committed to make genuine and reliable contributions to the scientific community. OMICS Group hosts over 400 leading-edge peer reviewed Open Access Journals and organize over 300 International Conferences annually all over the world. OMICS Publishing Group journals have over 3 million readers and the fame and success of the same can be attributed to the strong editorial board which contains over 30000 eminent personalities that ensure a rapid, quality and quick review process.

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- OMICS Group signed an agreement with more than 1000 International Societies to make healthcare information Open Access. OMICS Group Conferences make the perfect platform for global networking as it brings together renowned speakers and scientists across the globe to a most exciting and memorable scientific event filled with much enlightening interactive sessions, world class exhibitions and poster presentations
- Omics group has organised 500 conferences, workshops and national symposium across the major cities including SanFrancisco,Omaha,Orlado,Rayleigh,SantaClara,Chicago,Philadelphia,Unitedkingdom,Baltimore,SanAntanio,Dubai,Hyderabad,Bangaluru and Mumbai.

LASERS

AND

OPTICS

IN

CLINICAL UROLOGY

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- UROLOGY IS A BRANCH OF SURGERY
- WITH THE ADVENT OF NEWER INSTRUMENTS AND BETTER UNDERSTANDING OF THE HUMAN BODY FUNCTIONS, UROLOGY HAS MADE TREMENDOUS PROGRESS AS AN INDEPENDENT SPECIALTY
- MAJORITY OF UROLOGICAL SURGERIES ARE BEING UNDERTAKEN ENDOSCOPICALLY & ARE CLASSIFIED AS “MINIMALLY INVASIVE SURGERIES”

THIS PRESENTATION IS A TRIBUTE TO YOU ALL

"THE FACULTY OF ALL PHYSICISTS, BASIC RESEARCHERS & ENGINEERS"

WHO ARE CONSTANTLY DEVELOPING NEWER MATERIALS & EQUIPMENTS.

WITH THESE EQUIPMENTS, WE, THE MEDICAL PERSONNEL ARE OFFERING TREATMENT MODALITIES THAT ARE

SAFER AND LESS PAINFUL TO THE HUMANITY

&

ULTIMATELY, WE TAKE THE CREDIT

I WILL BE MAINLY DISCUSSING THE USE OF LASERS & OPTICS:

WHAT WE HAVE

&

WHAT WE WOULD PREFER TO HAVE

IN THE DAY TO DAY UROLOGICAL PRACTICE

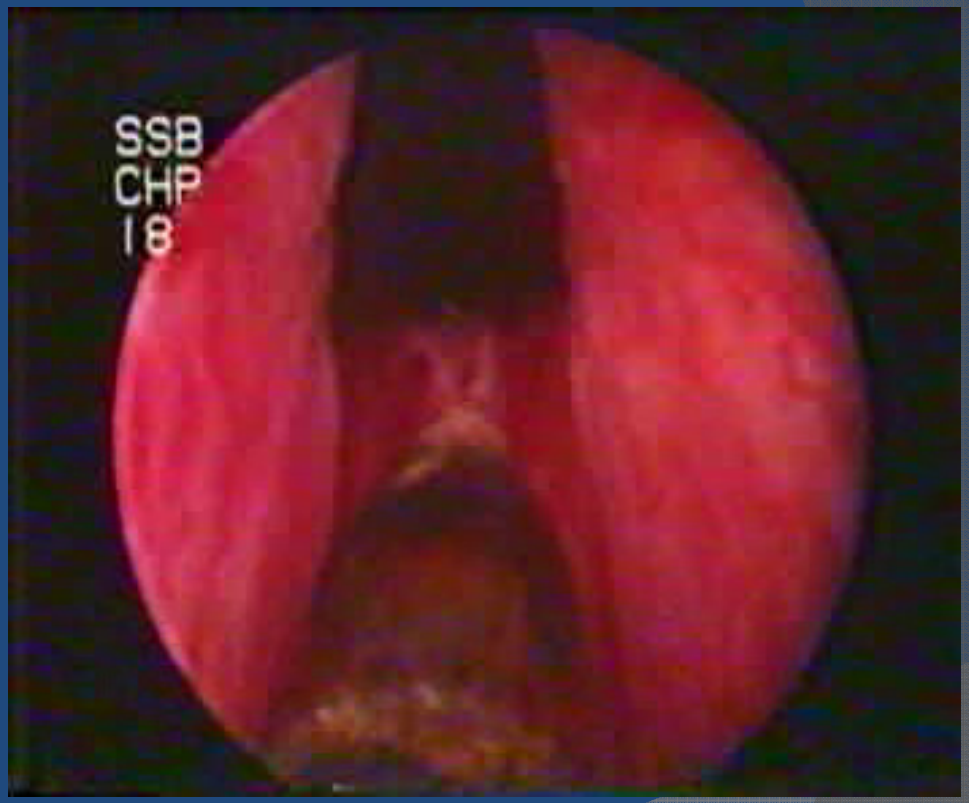
LASERS

FOUR TYPES OF LASERS ARE BEING USED IN UROLOGY

1. ND: YAG LASER
2. KTP (LBO) - GREEN LIGHT LASER
3. THULIUM LASERS (YAG & FIBER)
4. HOLMIUM: YAG LASER

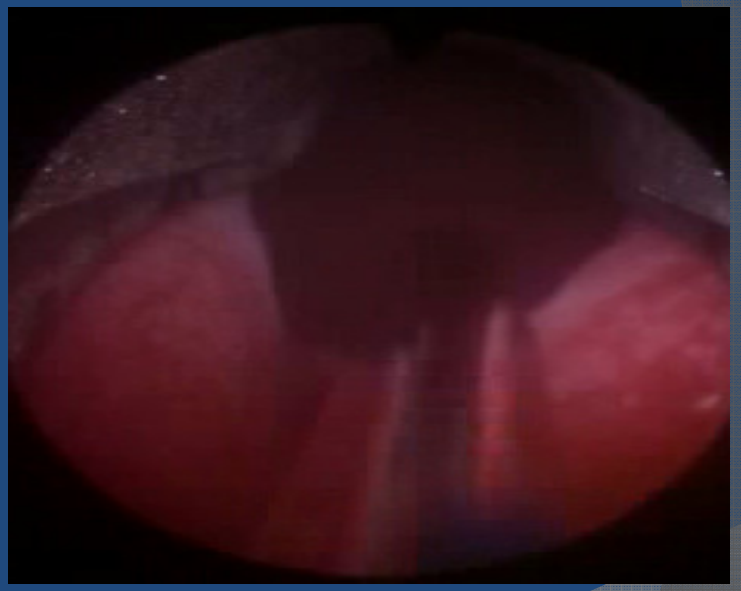
ND: YAG LASER

- NO IMMEDIATE SURGICAL EFFECT
- DEPTH OF TISSUE DAMAGE UP TO 10 MM
- EXCELLENT COAGULATION
- NO CUTTING
- NO EFFECT ON STONES
- NOT POPULAR IN UROLOGY AT ALL



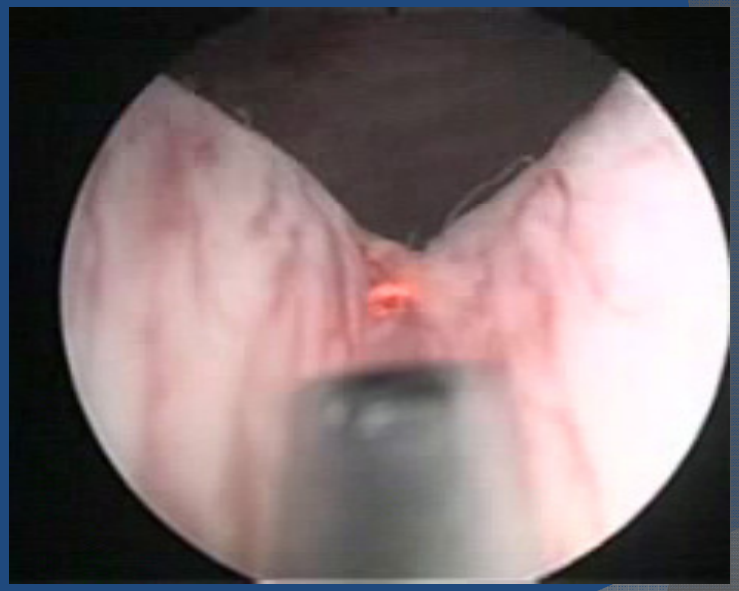
KTP (LBO) - GREEN LIGHT LASER

- VAPORIZATION OF RED TISSUE ONLY
- ONLY APPLICATION IS FOR BPH
- NO TISSUE FOR HISTOLOGICAL EXAMINATION
- NO EFFECT ON STONE
- SINGLE ORGAN CONFINED USAGE
- HIGH RECURRENT EXPENSES FOR SINGLE USE SIDE FIRING FIBER



THULIUM YAG LASER

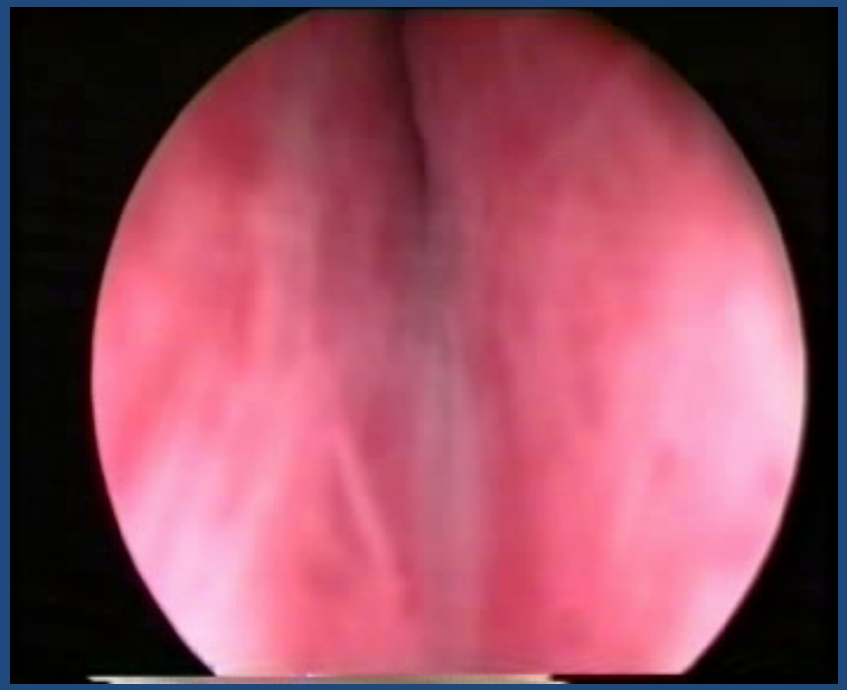
- EXCELLENT CUTTING & COAGULATION
- NO VIBRATIONS @ THE TIP – BETTER CONTROL
- GOOD FOR ALL SOFT TISSUE CUTTING
- SOME DEGREE OF CHARRING OF THE TISSUE
- WIDELY USED IN UROLOGY
- VERY LIMITED EFFECT ON SOFT STONES



HOLMIUM LASER

- BEST FOR STONE FRAGMENTATION - OF ALL TYPES
- GOOD CUTTING & COAGULATION UNDER IRRIGATION
- PULSED LASER -VIBRATIONS @ THE TIP – NEEDS GOOD STABILIZATION @ THE TIP
- MULTI DISCIPLINARY USAGE
- AS OF TODAY – MOST POPULAR LASER IN UROLOGY

HOLMIUM CLIPS



HOLMIUM LASER

- IN A DEVELOPING COUNTRY IT IS VERY IMPORTANT TO HAVE ONE LASER WHICH WILL BE USEFUL FOR SOFT TISSUE CUTTING + COAGULATION & BE USEFUL FOR CRUSHING ALL TYPES OF STONES
- HOLMIUM LASER SERVES BOTH THE REQUIREMENTS
- HENCE IT IS VERY POPULAR

HOLMIUM LASER

- HOLMIUM LASER IS A PULSED LASER
- HENCE THERE ARE CONSIDERABLE VIBRATONS AT THE TIP OF THE FIBER
- TISSUES SPLIT WITH THE CONTACT OF HOLMIUM LASER ENERGY (MECHANICAL EFFECT OF STEAM BUBBLE)
- LASER DELIVERY FIBER NEEDS TO BE STABILIZED ALMOST TILL THE TIP OF THE LASER

LASER: OUR WISH LIST

A SINGLE LASER MACHINE WITH

- ADJUSTABLE WAVELENGTH
- APPLICATION SPECIFIC SETTINGS
- LASER WAVELENGTH CAN BE DECIDED BY THE SURGEON:
- Eg: VAPORIZATION / CUT / COAGULATE / FRAGMENT STONES / BONE ABLATION, TISSUE TYPE & DEPTH OF PENETRATION

LASER: OUR WISH LIST

- SURGEON WILL INITIALLY SET THE PARAMETERS AS PER HIS NEEDS ON THE DISPLAY
- THE IDEAL WAVELENGTH WILL THEN BE FLASHED ON THE SCREEN
- SURGEON WILL SELECT THE REQUIRED WAVELENGTH & STARTS SURGERY
- IT SHOULD BE POSSIBLE TO DELIVER THE LASER ENERGY THROUGH A FLEXIBLE GLASS FIBER

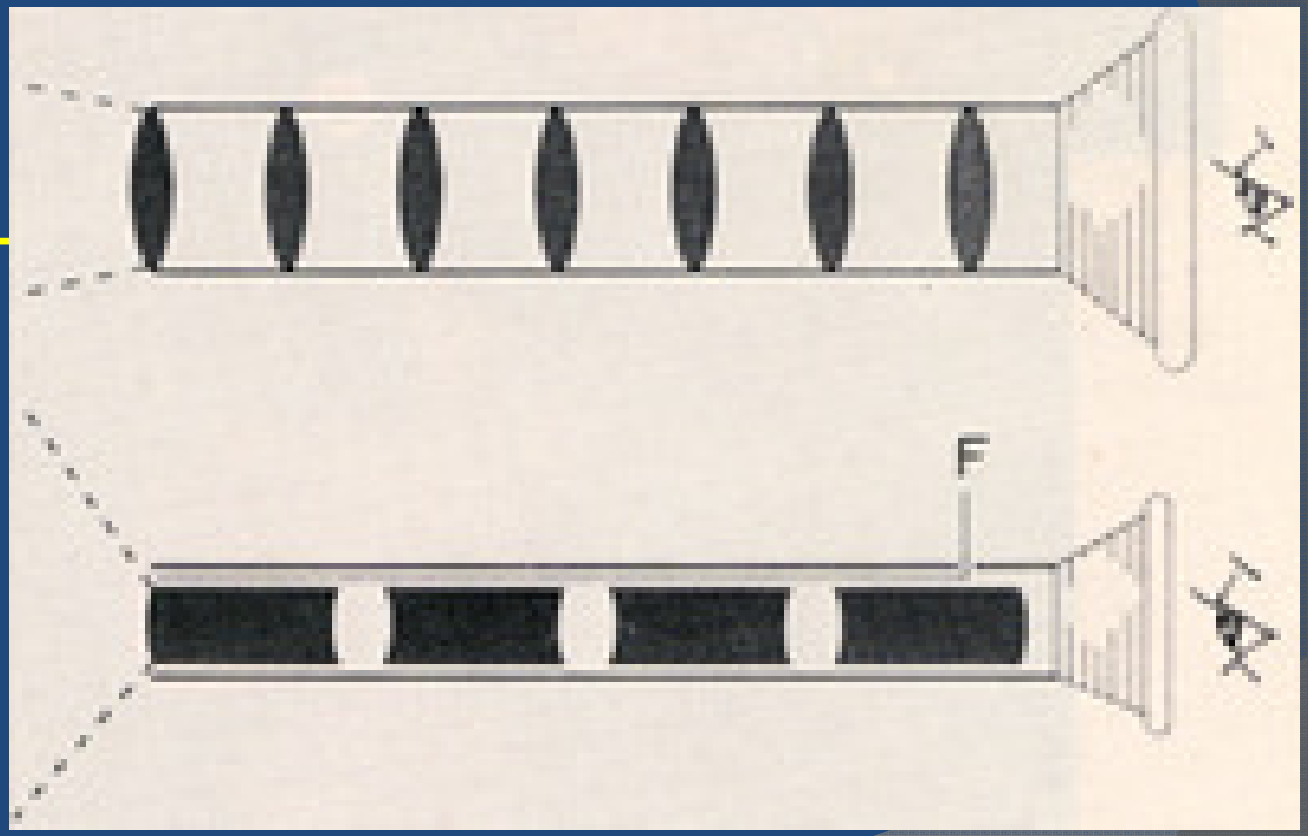
OPTICS

- PROF. HAROLD HOPKINS (UK) REVOLUTIONIZED ALL THE UROLOGICAL ENDOSCOPES BY INTRODUCING **ROD LENSES** (1966)
- QUALITY OF VISION WAS SUPERB
- THIS FACILITATED ENDOPHOTOGRAPHY & FILMING DUE TO THE INCORPORATION OF BRIGHT & COLD FIBER LIGHT

DESIGN OF ROD LENS

CONVENTIONAL

ROD



OPTICS

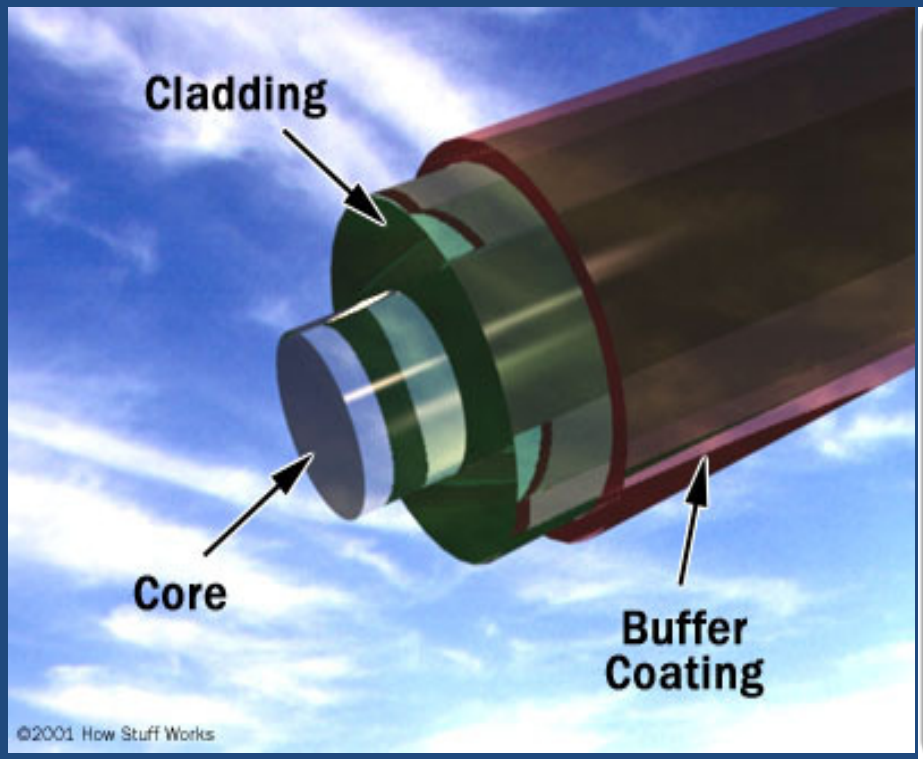
- NEXT STEP WAS TO PRODUCE TELESCOPES OF DIFFERENT SIZES AND LENGTHS
- BUT THERE WAS LIMITATION FOR PRODUCTION OF THINNER & LONGER TELESCOPES LIKE LONG & SLENDER URETEROSCOPES
- LONG & THIN SCOPES PRODUCED HALF MOONING EFFECT ON BENDING

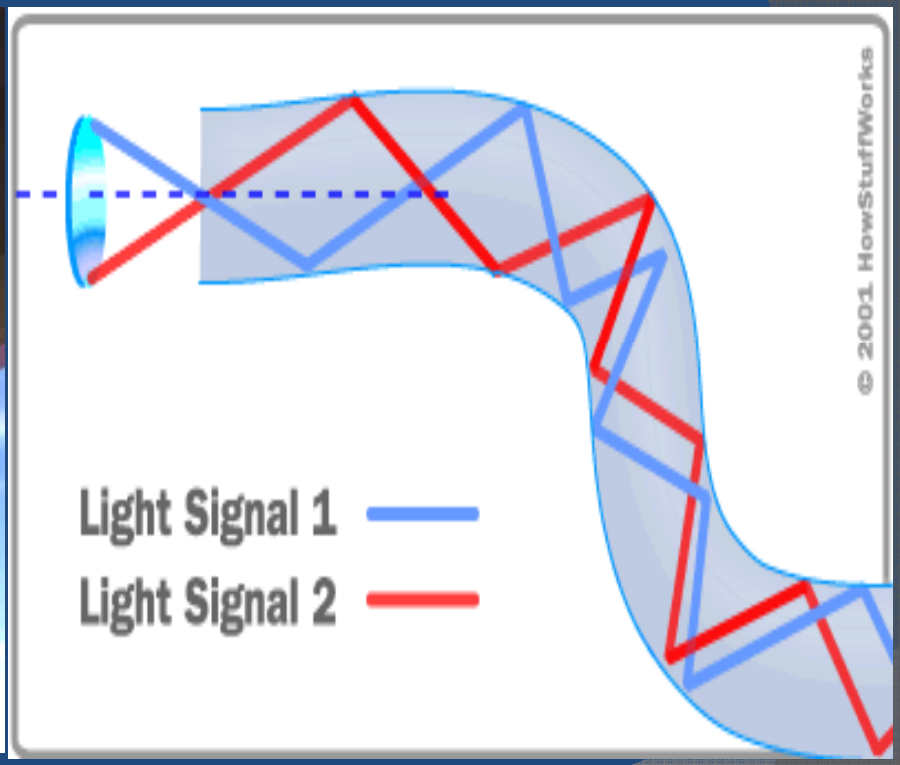
OPTICS

GLASS BUNDLE IMAGING

- A QUARTZ GLASS FIBER AFTER PROPER CLADDING IS CAPABLE OF TRANSMITTING LIGHT FROM ITS ONE END TO THE OTHER END
- DURING THE LIGHT TRANSMISSION THERE IS NO ATTENUATION OF LIGHT
- IN ADDITION MINIMAL HEAT IS TRANSMITTED – THUS AT THE OTHER OR “OBJECTIVE” END WE GET MINIMAL HEAT: HENCE IT IS CALLED AS “COLD LIGHT”

FIBER LIGHT & OPTICS PRINCIPLE

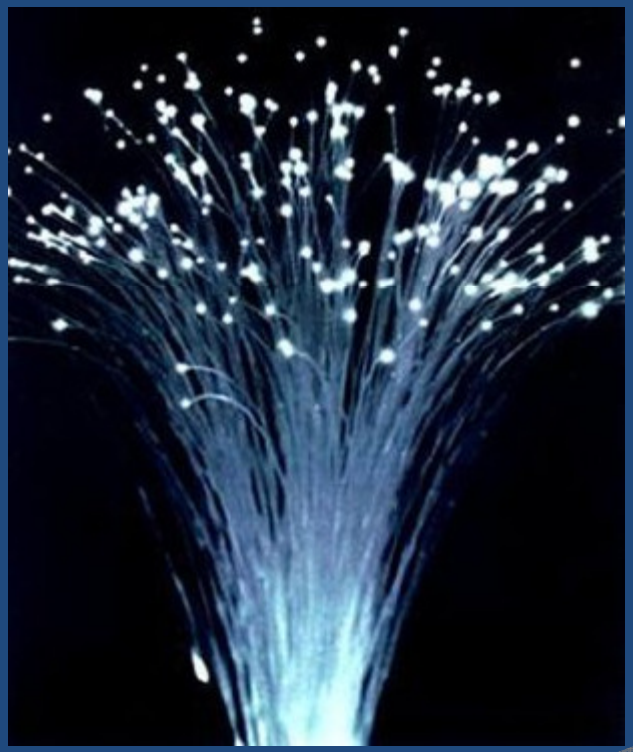




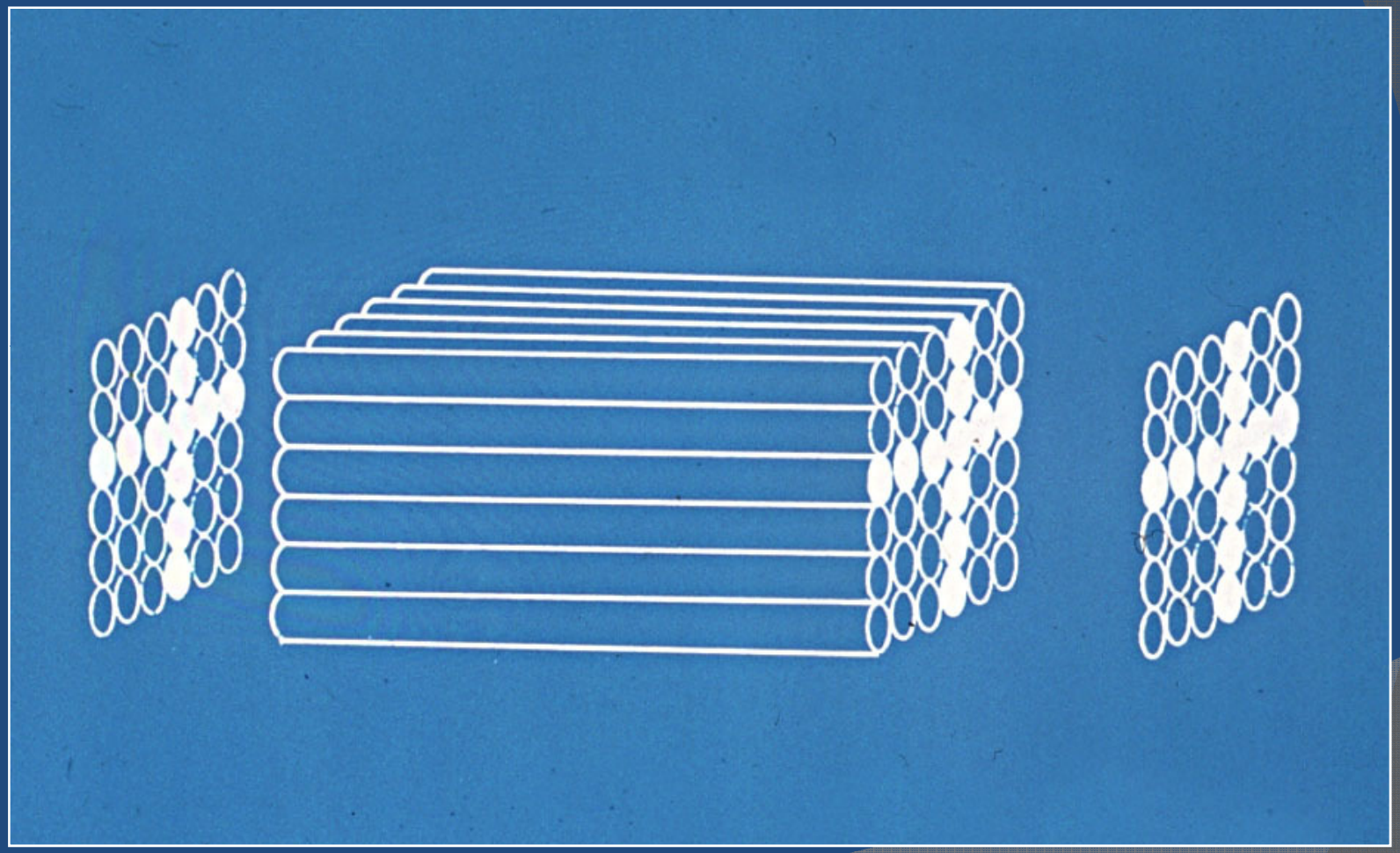
OPTICS

- NEXT LOGICAL STEP WAS TO ARRANGE THE GLASS FIBERS IN A COHERENT FASHION & USE THEM AS VISION BUNDLE
- ANOTHER PARALLEL INCOHERENT GLASS BUNDLE IS USED AS THE LIGHT CARRIER
- BY INCORPORATING THE ABOVE COMBINATION, SLENDER SEMI RIGID & FLEXIBLE TELESCOPES WERE SUCCESFULLY PRODUCED

FIBER LIGHT INCOHERENT BUNDLE



“COHERENT” IMAGE GUIDES



OPTICS

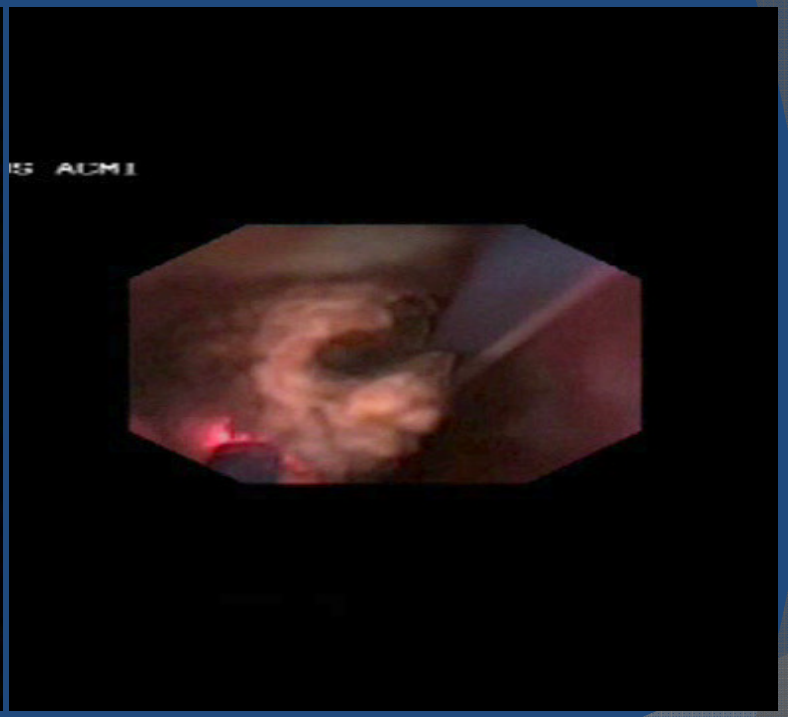
- LONG AND SLENDER SEMI-RIGID TELESCOPES (URETEROSCOPES) ARE QUITE DURABLE AND ARE IN EXTENSIVE USE.

- THESE FORM A PART OF BASIC ARMAMENTARIUM THAT ANY UROLOGIST SHOULD HAVE IN HIS INVENTORY OF EQUIPMENT

OPTICS

- ‘CHIP ON THE TIP’ WAS THE NEXT ADVANCEMENT
- VISUAL QUALITY IS OF HIGHEST ORDER IN COMPARISON WITH THE SEMI-RIGID & FLEXIBLE FIBER TELESCOPES
- WITH EACH REFINEMENT AND MINIATURIZATION, ENDOSCOPIC EQUIPMENTS ARE GETTING MORE DELICATE & EXPENSIVE

OPTICS



OPTICS

- OPTICS HAVE REACHED A VERY HIGH DEGREE OF PERFECTION
- RIGID AND SEMI-RIGID SCOPES ARE STURDY AND LONG LASTING
- MAIN PROBLEM IS WITH THE FLEXIBLE SCOPES.

OPTICS

- WHEN THESE INSTRUMENTS ARE DAMAGED, THEY CAN'T BE REPAIRED
- EXISTING COMPANIES NORMALLY FOLLOW THE POLICY OF 'REPAIR EXCHANGE'
- DAMAGED EQUIPMENT IS REPLACED BY A NEW ONE

OPTICS

- BREAKAGE OF THE WIRES WHICH PRODUCE DEFLECTION IN THE TERMINAL SEGMENT - DUE TO EXCESSIVE USAGE AND PRESSURE APPLIED
- DAMAGE OF THE VISION AND LIGHT CARRYING BUNDLES - DUE TO ACCIDENTAL FIRING OF LASER ENERGY WITHIN THE SHEATH OR CLOSE TO THE TIP LENS

OPTICS

OPTICS: OUR WISH LIST

- IS IT POSSIBLE TO INCORPORATE THIN BUT VERY STRONG WIRES FOR DEFLECTION PURPOSES ?

- IS IT POSSIBLE TO INCORPORATE LASER RESISTANT MATERIAL IN MANUFACTURE OF THE WORKING CHANNEL IN THE SHEATH, THROUGH WHICH LASER FIBER IS INSERTED ?

FUTURE PROSPECTS

- ALL THE LATEST INVENTIONS & MATERIALS ARE USED TO MANUFACTURE NEWER, BETTER & SAFER EQUIPMENTS

- ULTIMATELY THE END USERS,THE ‘MEDICAL PROFESSIONALS’ ARE TO BE CONVINCED TO USE THESE EQUIPMENTS

THUS THE END RESULT OF ALL THE COMBINED EFFORTS, BY YOU AND US,

WILL BE

SAFER AND LESS PAINFUL SURGERIES

&

A MORE HAPPIER PATIENT COMMUNITY

THANK YOU

Let Us Meet Again

We welcome all to our future group conferences of Omics group international

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