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Official Title

Comparison of the 100 W Holmium laser lithotripsy rate versus LithoClast Trilogy EMS in percutaneous mini-nephrolithotomy for patients with kidney stones GUY's 1 and 2: randomized clinical trial.

Registration number: CI-HRAEB-056-2020

Condition

Kidney calculi.

Autors

Dr. Edgard Efrén Lozada Hernández (Prinicipal investigator)

Dr. Braulio Omar Manzo Pérez (Principal investigator)

Dr. Edson Dazaeb Flores Hernández (Co-investigator)

Dr. Pompeyo Stalin Alarcón Regil (Co-investigator)

Contact

Edgard Efren Lozada Hernandez (Principal investigator)

edgardlozada@hotmail.com

Dr. Braulio Omar Manzo Pérez (Principal investigator)

E-mail: braom85@yahoo.com.mx

Comparison of the 100 W Holmium laser lithotripsy rate versus LithoClast Trilogy EMS in percutaneous mini-nephrolithotomy for patients with kidney stones GUY's 1 and 2: randomized clinical trial.

Background

The tools used for fragmentation and stone extraction have been improving over time. Commonly available lithotripsy power sources are classified as ultrasonic, kinetic, electrohydraulic, or combination (1), however, laser is the most widely used lithotripsy device in mini-PCNL as it is a small diameter power source.

Laser lithotripsy

The holmium laser has been very effective in the fragmentation of stones of variable hardness and very safe due to its low depth of penetration (0.5 mm) (2).

One of the advantages of the Ho: YAG laser is that it offers relatively quick lithotripsy while minimizing tissue trauma. Furthermore, it is effective against all stone compositions, including cystine and calcium oxalate monohydrate, where ultrasonic lithotripsy may have difficulties (3).

The removal of smaller fragments is possible using a vacuum effect where the fragments are moved from a high pressure zone in the pyelocaliceal system to a lower pressure zone in the sheath. If there are too many fragments, this requires multiple insertions and extractions of the nephroscope to facilitate the recovery of all of them. This repeated step can cause inadvertent movements that affect the results (4).

Combined ballistic-ultrasonic lithotripsy

LithoClast Trilogy EMS is the newest model of percutaneous lithotripsy technology that provides electromagnetic and ultrasonic ballistic energy, as well as suction capacity under the control of the surgeon through a single pedal. Laboratory studies have suggested that combined ballistic-ultrasonic lithotripsy offers faster stone clearance than other combined and ultrasonic devices. In an in vitro comparison, LithoClast Trilogy EMS had the fastest average removal time of 23.79 seconds. This was followed by ShockPulse (46.04 seconds), Select-US (54.86 seconds), and Select-USP (102.48 seconds) (5).

In a multi-institutional study, LithoClast Trilogy EMS was evaluated, the experience of surgeons with this device was perceived as highly satisfactory, with an excellent safety and durability profile. The average stone removal rate was 68.9 mm^2 / minute (6). High tissue safety and an optimized aspiration configuration were reported in a prospective clinical trial. In this study, the mean stone volume clearance ratios were 370.5 ± 171 mm^3 / min and 590.7 ± 250 mm^3 / min for mini-PCNL and PCNL, respectively (7).

LithoClast Trilogy EMS has a single probe design and connects to the handpiece and oscillates with a piezoelectric ultrasonic generator at a rate of 24 kHz. At the same time, an electromagnetic generator produces ballistic motion of the entire probe at an adjustable speed of up to 12 Hz. As with other ultrasound-based devices, suction is available through the hollow probe, with the foot pedal controlling the aspiration and activation of lithotripsy. The strength of the ultrasonic vibration, the aspiration and the ballistic energy discharge frequency are adjustable through a touch screen on the generator. Various probe sizes are available (3.3 F, 4.5 F, 5.7 F, 10.2 F, and 11.7 F catheter) (8, 7).

JUSTIFICATION

The desire to reduce complications related to percutaneous access and morbidity related to tract size has led researchers to evaluate PCNL using smaller-caliber instruments. In this context, mini-PCNL has emerged. Its efficacy and safety have been demonstrated at the cost of a lower stone-free rate.

The effectiveness of existing Ho: YAG lasers is limited by the need for manual removal of stone fragments and mobilization of them due to the lack of a simultaneous aspiration system. Consequently, this has been associated with long surgical times to achieve stone-free status. This requires multiple insertions and extractions of the nephroscope to facilitate the recovery of all fragments. This repeated step can cause the safety rails to be inadvertently removed or the sheaths to be disinserted. Sometimes compromising surgical results.

Faced with this situation, the search for better and more efficient energy sources still continues. With this, modern lithotripters have emerged that combine energy sources and work more efficiently than any of them independently and, consequently, improve stone removal. Cyberwand ™ (Olympus, Tokyo, Japan), Swiss Lithoclast® Master / Select (EMS SA, Switzerland / Boston Scientific, Marlborough, MA, USA) and Shockpulse-SE ™ (Olympus, Tokyo, Japan) are some examples; although they have their own set of advantages, none have proven to be superior to any other.

As previously discussed, ballistic-ultrasonic lithotripsy combines ultrasonic and ballistic energy together with a suction system with encouraging results in terms of a shorter lithotripsy time and the respective economic impact of fewer surgical events and less operating time required for the stone removal.

Therefore, it is convenient to make a comparison between the results of lithotripsy with Ho: YAG laser energy and lithotripsy with LithoClast Trilogy EMS; and thereby determine which is the most effective method in the resolution of kidney stones through a miniaturized percutaneous tract.

PROBLEM STATEMENT

What is the difference of the lithotripsy rate with LithoClast Trilogy EMS compared to 100 W Holmium laser for patients with kidney stones GUY's 1 and 2 in percutaneous mini nephrolithotomy?

PRIMARY OUTCOME

To compare the lithotripsy rate of LithoClast Trilogy EMS with the 100 W Holmium laser for patients with kidney stones GUY's 1 and 2 in percutaneous mini nephrolithotomy.

Stone clearance rate defined as the kidney stone surface area in square millimeters measured by pre-operative computed tomography scan divided by the time to remove the targeted stone burden in minutes.

Time to remove the targeted stone burden is measured at time the lithotripter unit starts fragmenting the stone to time all fragments are removed from the kidney based on visual inspection.

SECONDARY OUTCOMES

All complications measured by the Clavien Classification of Surgical Complications during surgery.

All complications measured by the Clavien Classification of Surgical Complications after surgery.

Stone free status as defined by the presence or absence of stone material on three months postoperative CT imaging.

Surgery time defined by the time in minutes from the cystoscopy to removal of the percutaneous access sheath.

HYPOTHESIS

H0: Lithotripsy performed with LithoClast Trilogy EMS in patients with GUY's 1 and 2 kidney stones undergoing percutaneous mini nephrolithotomy has a higher lithotripsy rate than that performed with a 100W Holmium laser.

Hi: Lithotripsy performed with LithoClast Trilogy EMS in patients with GUY's 1 and 2 kidney stones undergoing percutaneous mini nephrolithotomy has a lower lithotripsy rate than that performed with a 100W Holmium laser.

STUDY TYPE

Interventional.

STUDY DISIGN

Allocation: Randomized.

Intervention model: Parallel assignment.

Intervention model Description: Prospective, randomized, unicenter, two arm, comparative trial.

Masking: Single (Participant).

Primary Purpose: Treatment.

METHODS

Location, space and time.

Patients from the endourology service of the High Specialty Regional Hospital of Bajio, Leon, Guanajuato, who have the diagnosis of kidney stones GUY's 1 and 2 (see in annexes) and who will undergo a percutaneous mini nephrolithotomy from August 2020.

Researchers: Principal investigator, associate researchers and methodological advisor.

Own resources of the main researcher, infrastructure and resources of the aforementioned institution will be used.

The LithoClast Trilogy will be provided as evidence by Electro Medical Systems (EMS).

Sampling frame.

Study universe.

Patients from the endourology service of the High Specialty Regional Hospital of Bajio, Leon, Guanajuato.

Subjects of study.

Patients from the endourology service of the High Specialty Regional Hospital of Bajio, Leon, Guanajuato, who have the diagnosis of GUY's 1 and 2 kidney stones who will undergo a percutaneous mini nephrolithotomy during the period of August 2020 until completing the sample size.

Inclusion criteria.

Male or female patients older than 18 years with a diagnosis of GUY´s kidney stones 1 and 2 who will undergo a percutaneous mini nephrolithotomy, with preoperative serum hemoglobin> 10 g / dl, preoperative serum creatinine <1.5 mg / dl and with surgical risk I-III according to "American Society of Anesthesiologists". Previous negative urine culture. With postoperative follow-up with computed tomography at three months. Patients who are not participating in another project related to the treatment of lithiasis and who have signed an informed consent where they agree to be part of the study.

Exclusion criteria.

Patients with a history of coagulopathies.

Patients with anatomical abnormalities of the urinary tract.

Pregnant patients.

Patients with kidney stones GUY´s 3 and 4.

Patients who do not wish to participate in the clinical trial.

Patient who due to their physical and / or mental state are not able to sign the informed consent.

Elimination criteria.

Patients who have lost follow-up in the first three months after treatment.

Sampling type.

To convenience according to the patients who present to the external consultation of endourology.

Randomization.

It will be done with a table of random numbers generated with the Microsoft Office 2018 program for Windows Excel, all the numbers generated in this table will be the patients that consecutively belong to group A of “mini percutaneous nephrolithotomy and lithotripsy with LithoClast Trilogy EMS”. (Annex 5)

Blinding.

Double-blind. Patient and doctor who performs the statistical analysis will not know which group each patient belongs to.

Sample size.

The sample size calculation was based on determining a difference in means, this was made based on the study by York et al (2017), where a lithotripsy average of 68.3 was found with the use of combined ballistic-ultrasonic energy vs an average lithotripsy of 30 with holmium laser, with a study of a tail, an alpha of 0.05%, a power of 0.8 with an accuracy of 15% sufficient to demonstrate this difference. A total of 49 patients per group was obtained, 15% of losses were determined by adjusting the size of the groups to 58 in each arm.

Based on the following formula:

$$n = \frac{2\left(Z_{\alpha} + Z_{\beta}\right)^2 * S^2}{d^2}$$

- n = subjects required in each of the samples.
- Za = Z value corresponding to the desired risk.

- Zb = Z value corresponding to the desired risk.
- S2 = Variance of the quantitative variable that the control or reference group has.
- d = Minimum value of the difference to be detected.

Variables.

Independent: 100 W Holmium laser lithotripsy and LithoClast Trilogy EMS lithotripsy.

Dependents: Lithotripsy rate.

Other variables: Age, sex, body mass index, affected side, number of stones, stone load, stone location, Hounsfield stone units, presence of obstruction, GUY´s score, STONE score, CROES score, preoperative hemoglobin, postoperative hemoglobin, difference in hemoglobin values, preoperative creatinine, postoperative creatinia, difference in creatinine values, puncture site, number of punctures performed, number of paths performed, diameter of the dilation path, total surgical time, time of lithotrisia, presence of residual calculus by transoperative endoscopic evaluation, transoperative transfusion, tubeless, totally tubeless, postoperative fever, days of hospital stay, postoperative transfusions and presence of residual calculus by computerized axial tomography.

Techniques and procedures.

Assignment of the procedure.

116 cases will be subjected to a simple randomization with a table of random numbers, 58 patients will undergo a percutaneous mini nephrolithotomy and lithotripsy with LithoClast Trilogy EMS; and the remaining 58 will undergo 100W Holmium laser lithotripsy.

If the patient in question meets the established inclusion criteria, he will be hospitalized one day before the surgical procedure. It will be assessed by the anesthesiology service the afternoon before it.

Surgical technique.

In the room and under general anesthesia, in the Valdivia-Galdakao position, a Wolf 21 F cystoscope will be introduced, a systematic cystoscopy will be performed and the meatus will be recognized on the affected side. A 0.035 in x 150 cm PTFE hybrid guidewire will be passed to the renal cavities, an open-end ureteral catheter will be placed through the safety guide and with the aid of water-soluble iodinated contrast, ascending pyelography will be performed. The calyx will be selected according to the anatomy and the involvement of the stone and punctured under fluoroscope control with a simplified 0-90º technique. Subsequently, a hybrid working guide PTFE 0.035 in x 150 cm will be passed and its location will be verified in the collecting system. A double lumen ureteral catheter will be passed over the working guide, and later a safety guide will be placed, and the position in the collecting system will be verified under fluoroscopy. On the work guide, a 16 Fr fascial

diatator will be passed. Subsequently, a diathesis will be performed with a 16 Fr Karl Storz “one step” dilator. A 12 Fr MIP M nephroscope of Karl Storz 12 Fr will be introduced. A systematic nephroscopy will be performed and once the calculation will proceed to its fragmentation with 100 W Holmium laser or LithoClast Trilogy EMS and 1.5 mm x 440 mm probe, according to randomization..

The time required for the total removal of the stones will be measured, that is, from the moment the fragmentation begins, until its total extraction, once the absence of fragments has been confirmed under endoscopic control.

If they exist, the complications observed during surgery will be recorded and will be classified according to the Clavien-Dindo scale.

The surgeon will define, according to the findings, the need to use a urinary diversion at the end of the surgery and will be registered.

Postoperative.

Once the surgery is completed, the patient will go to the recovery area and later to hospital surveillance during which, his daily evolution will be evaluated and according to it, the postoperative complications observed will be recorded based on the Clavien-Dindo scale. All patients will complete prophylactic antibiotic therapy with third-generation cephalosporin; analgesia due to non-steroidal anti-inflammatory (ketorolac) and antispasmodic (butylhioscin); in addition to a single 8 mg dose of dexamethasone.

The day after the surgical procedure, paraclinical examinations will be performed, consisting of blood count, blood chemistry and procalcitonin. Hemoglobin and creatinine numbers will be recorded, compared with preoperative figures, and the difference will be calculated.

Follow up.

Once their adequate recovery is completed, the patients will be discharged, the days of hospital stay will be recorded. And they will be called at the outpatient clinic three months later with a simple abdominal tomography and control pelvis to assess stone-free status. Defining the above as the absence of stones in the collecting system greater than 2 mm in their maximum diameter.

The lithotripsy rate will be calculated by dividing the preoperative lithiasic charge measured by computed tomography in mm2 by the time in minutes required for the removal of the desired stone.

Data. Obtaining, conservation and processing.

Obtaining data and samples.

The data will be obtained after each surgery performed, based on the electronic clinical record and will be collected in an already encoded database (see annex) in the Microsoft Office Excel program. The information will be collected from August 2020 until completing the sample size. At the end of this period, each of the variables will be collected to begin their analysis and sub-analysis.

STATISTICAL ANALYSIS

Descriptive statistics will be performed with the commercial statistical program SPSS 25 for Windows. Qualitative variables will be reported as frequency and percentage. Quantitative variables will be subjected to the Kolmogórov-Smirnov normality test with Lilliefors correction, if they present a normal distribution they will be reported as mean and standard deviation, if they do not comply with the normality assumptions they will be reported as median and 25-75% percentile.

Two groups will be formed according to the type of surgical treatment received, the comparison of qualitative variables will be made with an x2 test or Fisher's exact test as the case may be, for quantitative variables they will be compared with a student's T test for independent groups. If the normality assumptions are not met, the comparison will be with a U Mann-Whitney test. The 95% confidence interval of these mean differences will be calculated. Any p value less than 0.05 will be considered statistically significant.

Association measures will be carried out to compare both groups through the calculation of the relative risk with its 95% confidence interval, the number needed to treat will also be measured and analysis will be carried out with intention to treat to determine that the losses do not influence the final result of the study.

ETHICAL ASPECTS

The study was submitted and approved by the Local Committee for Health Research of “Hospital Regional de Alta Especialidad del Bajío”. This protocol was designed according to the guidelines noted in the following codes:

Regulation of the General Health Law.

According to the regulations of the General Law of Health in the Matter of Research, for health, titles from the first to the sixth and ninth 1987. Technical Standard No. 313 for the presentation of projects and technical reports of research in the institutions of Health Care .

Federal regulation: Title 45, section 46 and that is consistent with good clinical practice.

This study is promoted by researchers who declare that they have no conflicts of interest. The data provided is not of direct commercial interest and its objective is to advance our understanding of the management of renal lithiasis. For the inclusion of the patient in the study, in the initial phase, the written informed consent of the patient and his legal representative will be obtained, after having provided them with detailed information about the study and answered their possible doubts or questions.

The study will be carried out in accordance with the ethical recommendations of the Declaration of Helsinki (2013 version) and the code of Good Clinical Practices, which avoid exposing the participating subjects to any unnecessary risk. Because it is a study where a therapeutic intervention is carried out, it is considered to have a risk greater than the minimum. All data will be handled anonymously, once the data has been obtained, respecting the confidentiality of the participating subjects in the documents. In order to maintain the anonymity of the data, a personal numerical code will be assigned to each patient, so that each subject will be uniquely identified by the assignment code in the study.

Researchers who analyze the database will thus not be able to access the name of the patient or any data that makes their identification possible, so that the identifying data of the patient will not appear in any publication or communication of the results of the study. Only the researchers from their center in charge of data acquisition will have access to the clinical and personal documentation of the participant; they will be responsible for maintaining the anonymity of the data. The patient information sheet that is attached details the patient's rights regarding their data.

DATA MONITORING AND SECURITY COMMITTEE

The Data and Safety Monitoring Board (DSMB) is a committee of experts, independent of the study, who will review the data to ensure the safety of participating patients and those to be recruited.

The DSMB may advise stopping the study in case of clear evidence of efficacy, a higher incidence of adverse effects in one of the branches of the study or in case of too slow patient recruitment.

The Waterfall-2019 DSMB is made up of Pedro Zapater (Clinical Pharmacology, University General Hospital of Alicante, experience in clinical trials, statistics and drug safety), Rodrigo Jover (Gastroenterology, University General Hospital of Alicante, experience in clinical trials, in studies in the field of diseases of the digestive system) and Vicente Climent (Cardiology, General University Hospital of Alicante, expert in heart failure and fluid overload).

The DSMB will meet for the first time when recruitment begins and will decide the frequency of its meetings.

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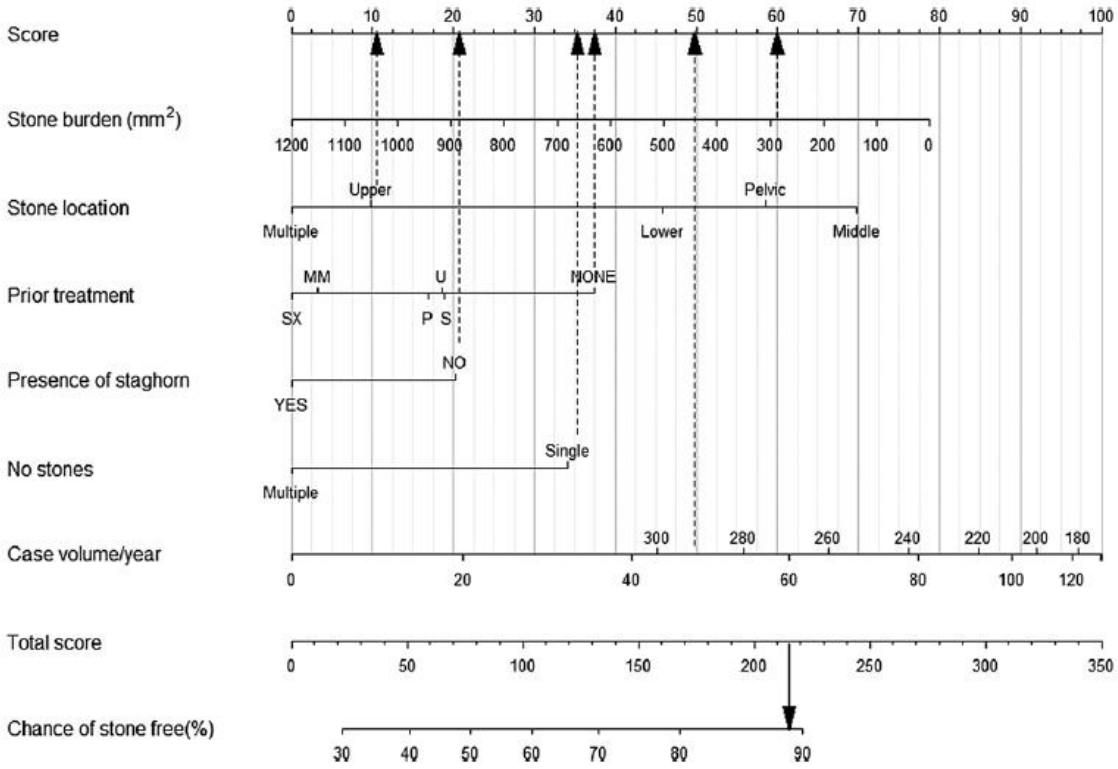
LIST OF ANNEXES INCLUDED

Anexx 1. Calvien-Dindo classification

Table 1: Clavien-Dindo classification.

Grades	Definitions of grades	Modes of therapy
Grade I	Any deviation from the normal postoperative course.	No pharmacological or surgical treatment, endoscopic or radiological interventions were required. Acceptable therapeutic regimens are drugs such as anti-emetics, antipyretics, analgesics, diuretics, and electrolytes and physiotherapy. Wound infections or small abscess requiring incision at bedside is within this category.
Grade II	Normal course altered	Pharmacological management other than in Grade 1. Blood transfusions and total parenteral nutrition are also included.
Grade III	Complications that require intervention of various degrees	Sub-classified into: Grade IIIa – complications that require an intervention performed under local anaesthesia. Grade IIIb – interventions that require general or epidural anaesthesia.
Grade IV	Complications threatening life of patients (including CNS complications), requiring ITU support	Further sub-classified into: Grade IV a – single organ dysfunction (including dialysis). Grade IV b – multi-organ dysfunction.
Grade V	Death of a patient	

Anex 2. CROES stone score.



Annex 3. STONE score.

Table 1. Summary of S.T.O.N.E. nephrolithometry scoring system

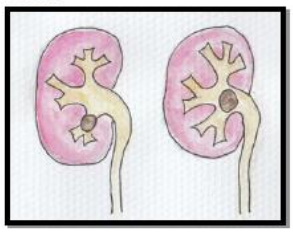
	Score			
Variable	1	2	3	4
Stone size (mm^2)	0-399	400-799	800-1599	≥1600
Tract length (mm)	≤100	>100		
Obstruction	None	Severe		
Calices (n)	1-2	3	Staghorn stone	
Essence (HU)	≤950	>950		

HU, Hounsfield units.

Annex 4. GUY´s stone score.

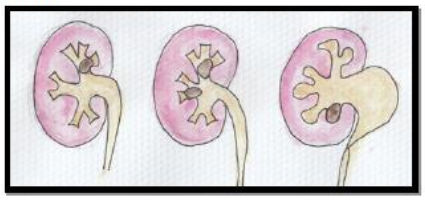
- Score based on all stones seen – not just those targeted in procedure.
- Abnormal anatomy is defined as: abnormal renal anatomy, an abnormal collecting system, or a patient with an ileal conduit (i.e. cases where operating surgeon believes access may be difficult).
- Stent encrustation does not affect score.

Grade I



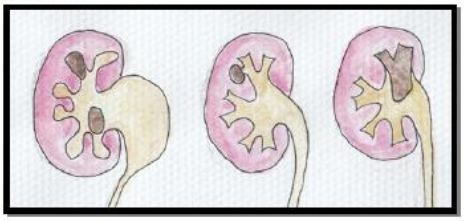
A solitary stone in the mid/lower pole with simple anatomy
Or
A solitary stone in the pelvis with simple anatomy

Grade II



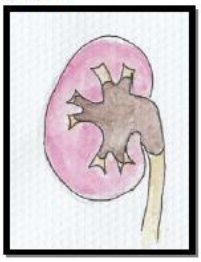
A solitary stone in the upper pole with simple anatomy
Or
Multiple stones in a patient with simple anatomy
Or
Any solitary stone in a patient with abnormal anatomy

Grade III



Multiple stones in a patient with abnormal anatomy
Or
Stones in a calyceal diverticulum
Or
Partial staghorn calculus

Grade IV



Staghorn calculus
Any stone in a patient with Spina Bifida or Spinal Injury

Figure 1. Guy's stone score.

Annex 6. Table of random numbers.

3	58	22	63	79	75
29	30	62	28	80	53
77	46	123	37	24	18
57	38	25	85	65	76
118	87	74	53	103	12
33	48	55	18	93	7
23	95	107	17	31	9
5	72	89	83	36	16
43	41	23	112	59	
19	61	21	68	71	

A. PATIENT INFORMATION SHEET

File number:	CI-HRAEB-056-2020
Official title:	Comparison of the 100 W Holmium laser lithotripsy rate versus LithoClast Trilogy EMS in percutaneous mini-nephrolithotomy for patients with kidney stones GUY's 1 and 2: randomized clinical trial.
Principal investigator:	Dr. Braulio Omar Manzo Pérez.
Service:	Endourology. Kidney calculi.
Center:	Hospital Regional de Alta Especialidad del Bajío. San Carlos la Roncha, 37660 León, Gto. Tel: 477 267 2000.

We are writing to you to request your consent to participate in a research project. This project has been approved by the Ethics Committee of the hospital. The project will be carried out in accordance with the standards of Good Clinical Practice and international ethical principles applicable to medical research in humans (Declaration of Helsinki and its latest revision). In order for you to decide whether to participate in this project, it is important that you understand why this research is necessary, what your participation will entail, how your information will be used, and its potential benefits, risks, and hassles. In this document you can find detailed information about the project. Please take the time to carefully read the information provided below and we will clarify any doubts that may arise. When you have understood the project, you will be asked to sign the informed consent if you wish to participate in it. If you decide to participate in this study, you should know that you are doing it voluntarily and that you may, likewise, abandon it at any time. In the event that you decide to suspend your participation, this will not entail any type of penalty or loss or damage to your rights and medical care. The project will be carried out in the Research Department of the Hospital Regional de Alta Especialidad del Bajío.

Both the researchers and the Hospital Regional de Alta Especialidad del Bajío will not receive any payment for carrying out this investigation.

1) Why is this study being done?

The purpose of this research is to compare two types of treatment for fragmenting kidney stones.

2) How many people will participate and where will they be selected?

It is planned to include in the study around 116 patients from the Hospital Regional de Alta Especialidad del Bajío.

3) What is known about this treatment?

It is a surgery in which a wound of approximately 2 cm is made on your back, which communicates with the kidney and the stone. Through it, a camera is introduced that allows visualizing the inside of the kidney and

fragmenting the stones with two energy options: the first, with a fiber that transmits laser light; and the second, a metal rod that hits the stones, breaks them up and sucks out the small fragments.

Both treatments are safe, and using the metal rod and suction has been found to reduce the time for surgery and the need for more surgery to remove all the stones.

4) What should I do if I agree to participate?

If you agree to participate in the study, the first thing to do is sign this informed consent. Then, you will have laboratory tests to see if you have all the necessary conditions to be included.

• A physical exam: Your blood pressure, heart rate, and breathing rate will be measured; it will be weighed and measured.

• Blood tests: Complete blood count, blood chemistry, general urinalysis, urine culture, and clotting times will be requested.

• Imaging and cabinet tests: Chest radiography and electrocardiography (study of the heart) will be requested.

• A preoperative evaluation by an internist will be requested to determine the surgical risk.

5) How long will I have to stay in the study?

Their participation is expected to last up to three months after the surgery.

It will be decided at random (like flipping a coin) which group you belong to. This is done to obtain reliable data from the study results. Neither you nor the investigator will know which group you were assigned to.

6) What other options do I have to treat my illness, if I decide not to participate in this research study?

Your disease can be treated with holmium laser lithotripsy.

7) What risks will I have if I participate in the study?

The risks of the surgical procedure regardless of the type of treatment used in the fragmentation of the stones are bleeding, infection, shock, coma, sepsis, urinary leakage, intestinal leakage, reoperation, death.

Female participant: If you are pregnant or breastfeeding, you cannot participate in this study to avoid exposing your child to risks. You also cannot participate in the study if you intend to become pregnant during the research or within three months of participating in the study. Abstinence from sexual activity is the only sure way to avoid getting pregnant. If you decide to have sexual intercourse, you should consult with the study doctor about the effectiveness and accessibility of the family planning method chosen by you, to which you are entitled by law.

In the case of being a woman and you become pregnant during the study, you will be withdrawn from it immediately and your health and that of your child will be monitored by the study doctor.If you become pregnant within three months of the end of the procedure, you should inform your doctor.

8) Will I get benefits for participating?

It is likely (although not certain) that you will not benefit from the results of this study; we hope it will be useful for people who have the same disease in the future.

9) Will you give me information about the results of the study, after its completion?

You will be informed of the results obtained in the follow-up consultations.

10) What expenses will I have if I participate in the study?

You will not have any extra expenses. The surgery will be performed according to the costs of the Bajío Regional Hospital of High Specialty at no extra cost regardless of the type of treatment used.

11) What will happen if I suffer an adverse event while participating in the study?

There is no extra risk in the use of these two treatment modalities other than those related to the surgical procedure, they were described in previous sections.

12) Can I stop participating at any time, even after accepting?

You are free to withdraw your consent to participate in the research at any time without prejudice to your subsequent medical care; you simply need to notify the investigator of your decision.

13) Can I be withdrawn from the study even if I don't want to?

The investigator, sponsor, ethics committee, and national or international regulatory authorities overseeing the study may decide to withdraw it if they think it is in your best interest.

14) Will I be paid to participate?

You will not be paid for your participation in this study.

15) Will you inform me if there are news throughout the study that could make me decide to stop participating?

If there is new information during the study that may be important enough that you may want to stop participating (for example, if several participants experience any unexpected side effects that you may be concerned about), it will be brought to your attention as soon as possible.

16) How will you keep my personal data confidential? How will they make my identity unknown?

The data that identifies you will be treated confidentially as required by law, except for those who are authorized to access your personal data, you will not be able to be identified. If the results of this study are published in medical journals or presented at medical conferences, your identity will not be revealed.

17) Who will have access to my personal data?

As part of the study, the principal investigator and the entire research team will have access to the results of their studies, such as laboratory tests and imaging studies.

At any time and in the event of any doubt or clarification, you can contact the person responsible for the study. Dr. Edson Dazaeb Flores Hernández. Telephone: +52 871 2 11 48 20.

B. INFORMED CONSENT

File number:	CI-HRAEB-056-2020
Official title:	Comparison of the 100 W Holmium laser lithotripsy rate versus LithoClast Trilogy EMS in percutaneous mini-nephrolithotomy for patients with kidney stones GUY's 1 and 2: randomized clinical trial.
Principal investigator:	Dr. Braulio Omar Manzo Pérez.

Me..... …..... .....

(Name and lastname handwritten by the participant)

I have read this information sheet and have had sufficient time to consider my decision.

I have been given the opportunity to ask questions and all of them have been answered to my satisfaction.

I understand that my participation is voluntary.

I understand that I can withdraw from the study:

• Whenever I want.

• Without having to explain.

• Without this affecting my medical care.

After having considered the information provided to me, I declare that my decision is as follows:

☐ I give ☐ I don't give

My consent for the access and use of my data in the conditions detailed in the information sheet.

PATIENT'S SIGNATURE:	**SIGNATURE OF INVESTIGATOR:**
NAME:	**NAME:**
DATE:	**DATE:**

PATIENT'S WITNESS SIGNATURE (LEGAL	**INVESTIGATOR'S WITNESS SIGNATURE:**

REPRESENTATIVE):	
NAME:	**NAME:**
DATE:	**DATE:**

REVOCATION OF CONSENT

I, …… revoke the consent granted on the date …… ……. and I do not wish to continue participating in the "Comparison of the 100 W Holmium laser lithotripsy rate versus LithoClast Trilogy EMS in percutaneous mini-nephrolithotomy for patients with kidney stones GUY's 1 and 2: randomized clinical trial.

PATIENT'S SIGNATURE:	SIGNATURE OF INVESTIGATOR:
NAME:	**NAE:**
DATE:	**DATE:**