

COMPARATIVE STUDY OF CONSERVATIVE AND SURGICAL METHODS FOR THE TREATMENT OF ACUTE CALCANEUS TENDON INJURIES

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SUMMARY

The treatment of acute calcaneus tendon injuries remains controversial. Intending to establish updated guidelines for treating those injuries, a literature review was conducted. Among the papers assessed, 1342 injuries were studied, with conservative treatment being applied in 354 injuries and the surgical treatment in 988. Sural-podal immobilization was most frequently used, regardless of the kind of treatment. No surgical technique was prevalent when this kind of intervention was employed. The following were concluded: Currently, there is no preferred treatment method described in literature, either conservative or surgical, where a consensus is seen among authors, which could be applied to all patients with acute calcaneus tendon

injuries. Competition athletes must preferably be treated with surgical repair of the tendon. Conservative treatment is preferable in sedentary or elderly patients, and in those suffering from diseases that may increase surgical risk. Surgical treatment, followed by early ankle mobilization, has presented good outcomes on functional tendon recovery. Immobilization should be sural-podal, not requiring knee immobilization both in conservative and surgical treatment of these injuries. The medial access port is preferable in surgical treatment due to the lower potential of sural nerve injury.

Keywords: Achilles tendon; Ruptures; Tendons.

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INTRODUCTION

Achilles tendon injuries are known since Hippocrates time; studies addressing the condition were first published by Ambroise Paré, in 1633 apud Cetti et al⁽¹⁾. Among all the tendons of the lower limbs, the Achilles tendon is the one that most frequently ruptures. Maffulli et al.⁽²⁾ believe that the incidence of such injuries has been growing lately due to the search for a better physical conditioning and to the increased sports practice by half-aged and old individuals. Although these may occur at any age, these injuries are most frequent between the third and fourth decade of life, showing a strong prevalence in males^(3,4-6). It seems that the Achilles tendon rupture more commonly occurs in those so-called "weekend athletes"^(5,7).

Many controversies exist regarding the treatment for acute ruptures of the Achilles tendon. There are two trends for treatment: conservative and surgical^(1,5,7-23).

The objective of the present study is to conduct a critical analysis of literature intending to recognize current guidelines for treating acute injuries of the Achilles tendon.

MATERIALS AND METHODS

The material for this study is derived from researches published in global scientific literature between 1953 and 2000 surveyed from online researches at Medline library, as well as manual surveys on previously selected articles, chosen because of their scientific relevance.

The search strategy in our study was performed from the keywords:

- in Portuguese: Aquiles, ruptura (words existent on LILACS database);

- In English: "Achilles, rupture".

Upon obtaining the summaries by means of this survey, we read them and selected relevant articles. After reading those articles, we surveyed

the references of each scientific paper, searching for new important and useful references.

RESULTS

We found 1378 acute Achilles tendon injuries in the reviewed literature^(1,4,5,7,9-16,19-30). From those, in 988, surgical treatment was employed and the conservative one was selected in 390 injuries.

By further analyzing the conservative treatment, we noticed that the most used kind of plaster dressing was the sural-podalic one since the beginning of treatment^(1,5,9,10,12,15,30). Some authors prefer crural-podalic immobilization for the first treatment weeks^(3,11,13). In this universe of 390 injuries treated conservatively, we found 48 recurrent ruptures (12.3%)^(1,3,9-16,30). Immobilization time ranged from five to 12 weeks, with a prevalence of eight weeks of immobilization^(9,10,12,13,15,30).

Regarding surgical treatment, we did not find prevalence of any specific repair technique. When postoperative immobilization was used, the sural-podalic one was mostly employed, with an immobilization period ranging from two to 10 weeks^(1,4,5,9,12,20,24,25,27,29,30). Rupture recurrence happened in 19 cases, corresponding to 1.9% of the total surgical cases, also including the cases where early mobilization was allowed^(26,28). 133 cases were reported (13.5%) to evolve to complications after surgery (recurrent rupture, sensitive disorders, infection, adherence)^(1,4,5,7,9,14,16,19-24,26-30).

Tables 1 and 2 show the results achieved by many authors mentioned in this study. On Table 1, data concerning the conservative treatment are provided, and, on Table 2, data concerned to surgical treatment are shown.

DISCUSSION

The treatment for Achilles tendon acute injuries has long been a reason for controversy in literature.

Kurtz⁽⁸⁾ reports that Hippocrates correlated injuries of that tendon

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to fever and death. In the beginning of the 20th Century, those injuries were treated with plastered dressings. However, with the improvement of surgical and anesthetic techniques, the surgical therapy has achieved popularity, being the treatment of choice during the 1950's and 1960's ⁽¹⁾. Only in the early 1970's, with the studies by Gillies and Chalmers⁽⁹⁾, and Lea and Smith⁽¹⁰⁾, scientific attention was turned again to conservative treatment. Since then, many researches have been conducted, sometimes showing better outcomes with surgical treatment, and sometimes evidencing better outcomes with the conservative treatment.

CONSERVATIVE TREATMENT

Conservative treatment is based on the use of plastered immobilization until injured tendon healing is achieved. Many authors prefer the conservative treatment for Achilles tendon acute injuries. Gillies and Chalmers⁽⁹⁾, Lea and Smith⁽¹⁰⁾, Keller and Rasmussen⁽¹¹⁾ report that the conservative treatment provides good results. Nistor⁽⁶⁾ concludes that both the conservative treatment and the surgical one may lead to good outcomes; however, conservative treatment presents less morbidity, lower number of postoperative complaints, and does not require hospitalization. Therefore, it should be the treatment of choice. Garden et

Date	Author	Tendons	Plastered Dressing kind	Immobilization time	Early ankle flexion	Rupture recurrence	Superficial infection	Deep infection	Adherences	Neuritis
1953	Christensen	16	crural-podalic	10	Equine	-	-	-	-	-
1970	Gillies and Chalmers	7	sural-podalic	8	Equine	1	-	-	-	-
1972	Lea and Smith	55	sural-podalic	8	Equine	7	0	0	0	0
1976	Inglis	31	crural/ sural-podalic	5 - 9	Equine	9	-	-	-	-
1978	Jacobs	32		6 - 8	Equine	7	-	-	-	-
1980	Edna	10	sural-podalic	8	Equine	3	-	-	-	-
1981	Nistor	60	sural-podalic	7	Equine	5	-	-	-	-
1984	Keller	37	crural-podalic	12	Equine	2	-	-	-	-
1987	Garden	51	sural-podalic	8	Equine	1	-	-	-	-
1993	Cetti	55	sural-podalic	6	20° equine	7	0	0	0	1
2000	Nestorson	11	sural-podalic	8	-	4	1	0	0	1
2000	Ferrer	25	crural-podalic	8	Equine	2	-	-	-	-

Time in weeks; "-": not mentioned by author

Table 1 – Studies in literature addressing conservative treatment of acute Achilles tendon injuries.

Date	Author	Tendons	Plastered Dressing kind	Immobilization time	Early ankle flexion	Rupture recurrence	Superficial infection	Deep infection	Adherences	Neuritis
1953	Christensen	33	crural-podalic	10	equine	-	-	-	-	-
1963	Hooker	28	crural-podalic	6	equine	-	-	-	-	1
1970	Gillies e Chalmers	6	sural-podalic	8	equine	0	1	-	-	-
1976	Inglis	48	crural/ sural-podalic	5 - 9	equine	0	2	-	-	-
1978	jacobs	26		6 - 8	equine	0	3	-	2	-
1980	Lennox	20	crural-podalic	6 - 8	neutral	0	3	0	0	0
1981	Nistor	45	sural-podalic	7	equine	2	-	2	20	8
1981	Inglis & Sculco	163	crural/135 sural/23	8	-	0	4	-	-	-
1983	Cetti	57	sural-podalic	6	equine	1	0	-	6	-
1985	Kellam	48	24 crural/24 sural	8	equine	1	1	0	-	1
1987	Garden	53	sural-podalic	8	equine	0	-	-	-	-
1992	Carter	21	orthosis/ mobil	(orthosis) 6 - 8	early mobilization	0	2	-	1	-
1993	Cetti	56	sural-podalic	6	20° equine	3	0	2	6	7
1994	Cetti	60	sural-podalic	6	20 ° equine	3	1	-	5	6
1994	Solveborn	17	orthosis/ mobil	(orthosis) 6	early mobilization	0	0	0	5	0
1995	Troop	13	sural-podalic	7	20	1	1	0	0	0
1995	Krueger-Franke	122	crural-podalic	6	30	3	4	-	-	-
1995	Mandelbaum	29	sural-podalic	4 - 5	equine	0	2	0	0	0
1998	Speck	20	sural-podalic	6	0°	0	0	0	0	0
1998	Leppilahti	101	sural-podalic	6	equine	4	5	2	1	8
2000	Nestorson	14	sural-podalic	8	-	1	3	-	2	1

Time in weeks; "-": not mentioned by author

Table 2 - Studies in literature addressing surgical treatment of acute Achilles tendon injuries.

al.⁽¹²⁾ recommend conservative treatment for injuries diagnosed within the first 48 hours. In injuries dating over a week, surgical treatment provides better outcomes, according to some authors. Ferrer et al.⁽¹³⁾ conclude that, in patients above 30 years old, with up to 5-mm diastasis of stump with the ankle at 20° plantar flexion, the conservative treatment shows good outcomes. In all cases, the criterion for establishing a conservative treatment is the measurement of the distance between tendon's stumps by means of ultrasound tests with the ankle at 20° of plantar flexion. A distance shorter than 5 mm between tendon's stumps enables conservative treatment.

Authors such as Jacobs et al.⁽¹⁴⁾ and Edna⁽¹⁵⁾, after using conservative treatment, did not report good outcomes, especially regarding rupture recurrence rates, and do not regard conservative treatment as the therapy of choice.

KIND OF IMMOBILIZATION

Because the musculature that constitutes Achilles tendon acts not only on ankle and subtalar joints, but also on knee joint, some authors prefer the crural-podalic plastered dressing for total immobilization of these injuries since the beginning of treatment. Keller and Rasmussen⁽¹¹⁾ and Ferrer et al.⁽¹³⁾ use a crural-podalic plastered apparatus with knee at 45° flexion and ankle at equine position for the first weeks.

Most authors employing a conservative treatment, such as Cetti et al.⁽¹⁾, Nistor⁽⁵⁾ and Lea and Smith⁽¹⁰⁾ recommend the use of a sural-podalic plastered apparatus with ankle at equine position only in the first immobilization weeks. Garden et al.⁽¹²⁾ comment that, although the crural-podalic immobilization is supposedly desirable because it neutralizes gastrocnemius action and enables injury tendon edges apposition, its analysis does not reveal any correlation between the use of a crural-podalic immobilization and better outcomes. Davis Junior et al.⁽³¹⁾ reported that, in cadavers, an ankle plantar flexion of 15° - 25° virtually nullifies gastrocnemius muscle's strengths on Achilles tendon, regardless of knee motion.

Despite of the theoretical advantage of knee immobilization with a crural-podalic plaster apparatus mentioned by some authors, we believe that it is already established both from patients follow-up – as described by Garden et al.⁽¹²⁾ – and from experiments on cadavers, such as those performed by Davis Junior et al.⁽³¹⁾ that the sural-podalic immobilization keeping the ankle at plantar flexion position around 20° for the first weeks is enough for a conservative treatment of acute Achilles tendon injuries.

IMMOBILIZATION TIME

The plastered immobilization time ranged from five to 12 weeks according to the studies reviewed.

Most authors kept patients immobilized during six to eight weeks. Lea and Smith⁽¹⁰⁾ believe that eight weeks of immobilization are required, and that a higher incidence of rupture recurrence is related to a shorter immobilization period.

Also, we noticed the use of a hindfoot lift (heels) of 2.5 cm in average, for four additional weeks after removing the plastered immobilization, regardless of the use of a crural or sural-podalic plaster, by a large portion of authors, for protecting a healed tendon.

GAIT WITH LOAD

The permission for applying load on injured limb varied a lot among the surveyed studies. There is no standard procedure for allowing load on an injured limb. Some authors immediately allow load, while others prefer to keep the limb at rest for some time. Nistor⁽⁵⁾ and Edna⁽¹⁵⁾ immediately allow load on injured limb. Gillies and Chalmers⁽⁹⁾, and Cetti et al.⁽¹⁾ allow load after four weeks of treatment, when they reduce the initial ankle's plantar flexion position. Ferrer et al.⁽¹³⁾ allow load only after six weeks of treatment.

Early immobilization at equine position seems to be a hurdle for allowing early gait. The use of metal supports as heels built in plastered dressings may be an alternative for solving this problem. Despite of that, it seems sensible to us to allow gait with load on injured limb when the ankle is at equine position no more, which

enables gait and initially keeps a lifted injured limb, thus reducing local edema.

RUPTURE RECURRENCE

The most common complication in the conservative treatment of Achilles tendon injuries is rupture recurrence. Many authors, such as Edna⁽¹⁵⁾, after seeing 30% of rupture recurrence rate in their cases, conclude that conservative treatment should not be the treatment of choice for acute Achilles tendon injuries. Inglis et al.⁽¹⁶⁾ recommend surgical treatment for acute ruptures of the Achilles tendon since they reported a rate of 29% of recurrences after conservative treatment. On the other hand, Garden et al.⁽¹²⁾, who did not see any recurrence cases in the 37 patients conservatively treated within the first 48 hours after injury. Keller and Rasmussen⁽¹¹⁾ noticed a recurrence rate of 5.4%.

Lea and Smith⁽¹⁰⁾ associate a higher incidence of rupture recurrence to a shorter immobilization time. For them, eight weeks of plastered immobilization are required for reducing recurrence risks. Yet, they reported seven (12.7%) cases of rupture recurrence in 55 cases treated conservatively.

Wills et al.⁽¹⁷⁾ report a 17.7% rupture recurrence rate in a literature review (40 cases in 226 patients treated). We found 48 rupture recurrence reports after conservative treatment of 390 acute Achilles tendon injuries (12.3%).

Most rupture recurrence cases occur within the period immediately after plastered dressing removal, when some kind of physical activity is allowed to patients, but extra care is still required. For Nistor⁽⁵⁾, such 'carelessness' after conservative treatment is an important factor for determining the incidence of rupture recurrences in conservatively treated cases.

The visualization of the distance between a ruptured tendon's stumps by means of any imaging test, previously to establish a conservative treatment was not a relevant issue in literature. Ferrer et al.⁽¹³⁾ and Cetti⁽¹⁸⁾ use ultrasound for this purpose. Ferrer et al.⁽¹³⁾ determined a conservative treatment when that distance was shorter than 5 mm at the ultrasound, with the ankle kept in 20° equine during test. However, the authors do not mention any patient exclusion from treatment protocol for not meeting this pre-requirement to conservative treatment. We didn't find studies comparing the initial distance of the tendon's stumps to rupture recurrence incidence in literature.

SURGICAL TREATMENT

Surgical treatment is provided by overlying an injured tendon's edges using suture. Many authors such as Christensen⁽³⁾, Mandelbaum et al.⁽⁴⁾, Lennox et al.⁽¹⁹⁾, and Cetti and Christensen⁽²⁰⁾ have advocated a better functional outcome after surgery. Nevertheless, surgical treatment also presents some complications.

Krueger-Franke et al.⁽²¹⁾ comment that despite of the good outcomes achieved with surgical treatment, the high rate of complications (15.1%) shows that new treatment protocols should be studied, as well as conservative treatments, in order to determine the best treatment to those injuries.

Troop et al.⁽²⁴⁾ concluded that the early mobilization after surgical treatment in cases of acute rupture of Achilles tendon does not impose higher risks of recurrence in patients who are compliant with treatment. They also concluded that an accelerated rehabilitation program provides good outcomes regarding plantar flexion, and Achilles tendon resistance and strength. The relevant issue of early mobilization in Achilles tendon injuries is related to rupture recurrence. According to the authors, that risk should be assessed against the benefits of the early mobilization in those injuries.

ACCESS PORT

Nistor⁽⁵⁾ surgically treated 44 patients with acute Achilles tendon injuries, sometimes using a lateral access port, sometimes the medial access port, both in a straight line. He noticed sensitivity disorders on sural nerve in nine patients, in seven of which the lateral access port was used.

Troop et al.⁽²⁴⁾ and Speck and Klaue⁽²⁵⁾, also use the medial access

port due to the potential sural nerve injury.

There are no doubts by literature regarding the preferred access port in the surgical treatment of Achilles tendon injuries. Due to the potential sural nerve injury with the lateral port, the medial access is preferable.

KIND OF IMMOBILIZATION

Authors such as Inglis and Sculco⁽⁷⁾, Lennox et al.⁽¹⁹⁾ and Hooker⁽²²⁾ use early crural-podalic immobilization postoperatively. Hooker⁽²²⁾ use, in some cases, a sural-podalic plaster dressing and does not find differences between both kinds of immobilization in end outcome.

Most of the studies such as the ones by Nistor⁽⁵⁾, Cetti et al.⁽¹⁾ and Kellam et al.⁽²³⁾ use a postoperative sural-podalic plaster dressing, with the ankle initially immobilized with some plantar flexion.

Davis Junior et al.⁽³¹⁾ show that knee immobilization is unnecessary. We believe that their results are valid both for conservative and for surgical treatments.

After removing the plastered immobilization, the great majority of authors recommend hindfoot lifting (heels) of 2.5 cm in average for four additional weeks, regardless of whether a crural or a sural-podalic dressing has been used.

IMMOBILIZATION TIME

Plastered immobilization time after surgical treatment was ten weeks, at most, as employed by Christensen⁽³⁾. In most of the studies, plastered immobilization was kept for six – eight weeks^(1,5,7,9,12,14,19-25,27,29,30). When immobilization is required, we prefer keeping the patient immobilized for eight weeks with a sural-podalic dressing for reducing the chances of rupture recurrence, in the first four weeks with the ankle at 20° equine and in the remaining four weeks with ankle at a neutral position. As shown by Davis Junior et al.⁽³¹⁾ knee immobilization is unnecessary, provided that the ankle is immobilized at 20° equine. After the plastered immobilization period, we believe it is recommendable (as other authors do) to lift the hindfoot for four additional weeks. We have allowed load on injured limb when the dressing is changed and the ankle is at a neutral position. Although some authors allow immediate load, an early ambulation with plastered dressing becomes difficult because of ankle's equine position. Furthermore, lifting an injured lower limb in the first days after injury helps on treating edema at rupture site.

EARLY MOBILIZATION

In the search for better functional outcomes after treating Achilles tendon rupture, many authors introduced protocols with early mobilization of the ankle postoperatively. The deleterious effects of immobilization have been described by Booth⁽³²⁾: strength reduction and reduced volume of skeletal muscles, as well as an increased fatigue during efforts; Immobilization removal, allowing for mobilization and use of the skeletal muscle would be a way to avoid such damages to the muscles. The use of immobilization allowing a limited joint motion may help on reducing muscular atrophy. Mandelbaum et al.⁽⁵⁾, Speck and Klaue⁽²⁵⁾, Carter et al.⁽²⁶⁾, Cetti et al.⁽²⁷⁾ and Solveborn and Moberg⁽²⁸⁾, use an early mobilization protocol postoperatively and do not report any case of rupture recurrence.

Troop et al.⁽²⁴⁾ report good outcomes in all patients treated with early mobilization postoperatively. The key issue of the early mobilization in cases of Achilles tendon injuries is concerned to rupture recurrence. According to some authors, the risk vs. benefit ratio must be assessed regarding early mobilization during treatment. They state that the early mobilization, in cases of acute rupture of the Achilles tendon, does not increase the risk of rupture recurrence in patients who are compliant to the treatment. They also conclude that an accelerated rehabilitation program provides good outcomes to the tendon in terms of plantar flexion, resistance and strength.

Currently, the possibility of early mobilization of the ankle and feet seems to be the major advantage of the surgical treatment over the

conservative one. However, awareness and total compliance of the patient are required, because, although some treatment protocols allow an early full load application, none allows maximum and unrestrained dorsiflexion of the ankle; this could increase the incidence of rupture recurrence in a sutured tendon. The outcomes, in terms of ankle mobilization and muscular strength, after these treatment protocols, are regarded as excellent by all authors.

RUPTURE RECURRENCE

Although not using a similar surgical treatment protocol, in several studies, we noticed an overall incidence of 1.9% of rupture recurrences in cases of acute Achilles tendon injuries surgically treated (19 cases from 988 tendons submitted to surgical treatment).

Krueger-Franke et al.⁽²¹⁾ reported a 2.5% recurrence rate in 122 surgically treated tendons. The mention that, in ruptures that are very close to Achilles tendon insertion (less than 2 centimeters), they found a 6.1% recurrence rate. They discuss that this high incidence rate in this kind of injury may be associated to a higher level of difficulty of the surgical repair technique, since the distal stump of the tendon is very small. For these cases, they recommend some stronger suture technique, such as the use of slim plantar tendon as reinforcement, or a tendon's transbone re-fixation.

OTHER COMPLICATIONS

From 44 patients with acute Achilles tendon injuries surgically treated, Nistor⁽⁵⁾ reports two cases of deep infection, resolved with clinical treatment. He also report other 29 complications called by the author as secondary complications. These were 20 cases of adherences between tendon and skin and nine cases of sensitive disorders of the sural nerve. He correlates these sensitive disorders of the sural nerve to the use of lateral access port. He also mentions as a complication cases of skin and tendon necrosis, not found by him. Wills et al.⁽¹⁷⁾ describe an overall complications incidence of 20% after surgical treatment. However, they report that the complications rate has been lowering in more recent studies. Krueger-Franke et al.⁽²¹⁾ found 15.1% complications with surgical treatment in 101 tendons, including seroma, eczema, scar hypertrophy, suture dehiscence, as well as rupture recurrence, infection, sensitive disorders and scar adherences.

By analyzing the number of rupture recurrences, sensitive disorders, adherences on surgical wound and infections, we found 133 reports in 988 tendons (13.5%) submitted to surgical treatment.

It is interesting to note that the incidence of those surgical complications (13.5%) is similar to the incidence of rupture recurrences after conservative treatment (12.3%).

Apparently, there is no globally accepted treatment as the best option for Achilles tendon injuries. Both surgical and conservative treatments have their advocates, as well as opponents.

Not taking into account the possibility of early mobilization, after surgical repair, immobilization time and kind are almost the same for both treatment approaches, leaving doubts about the potential treatment approaches when patients with Achilles tendon injuries are discussed. If immobilization and the required use time are similar for both treatments, how superior are the advantages of a surgical treatment considering that complications potential is almost the same? Is that possible that a simple theoretical advantage, according to some authors, of a stronger plantar flexion, power and resistance recovery justifies the risks of a surgery? What is the required plantar flexion strength for a clinically normal gait?

When using a conservative treatment, Ferrer et al.⁽¹³⁾ and Cetti⁽¹⁸⁾ recommend the use of a non-invasive method (ultrasound was employed by both) for identifying ruptured edges of the tendon, these make contact after plantar flexion of the ankle that will be maintained in the early immobilization. The failure in adopting such approach make us think that either the distance of the injured tendon edges does not influence a conservative treatment, or these edges are never separated by a distance longer than the minimum required one for determining a conservative treatment, according to Ferrer et al.⁽¹³⁾, 5mm.

After the excellent study by Davis Junior et al.⁽³¹⁾, in our opinion,

there are no questions regarding the kind of immobilization to be used in such injuries, since the ankle immobilization at 20° equine almost nullifies the gemini muscles effect on tendon when knee is mobilized.

A great hope for those advocating surgical treatment is the possibility of early mobilization, soon after surgery^(26,28). The result of this treatment protocol seems to be promising to us; however, patients' compliance and full understanding about the treatment. Thus, we cannot apply it carelessly, in all patients.

This literature review showed that there is no way of standardizing a treatment method for all patients with acute Achilles tendon injuries. The preferable treatment for competition athletes is surgical, because, supposedly, according to Inglis et al.⁽¹⁶⁾, it leads to a better tendon recovery in terms of torque, resistance and muscular power⁽¹⁷⁾. For sedentary individuals, as well as elderly, those with acute Achilles tendon injuries, and individuals with diseases that enhance surgical risk, the conservative method is preferred.

The question regarding which treatment method we should use lay on those patients who do not fit to none of the groups. They constitute exactly the majority of the individuals who underwent a spontaneous rupture of this tendon. Based on a literature review and on patients treated by the author, using both methods, we believe that today's best approach is to explain prognosis, possible complications, risks and benefits of both approaches to patients, leaving up to them to choose

the most convenient treatment method that best fits their expectations and lifestyles, enabling patients to become an allied to treatment (either surgical or conservative), willing to help throughout the process, avoiding potential complications and enabling a better functional recovery of the injured limb.

CONCLUSIONS

1. Currently, there is no preferable treatment method, either conservative or surgical, enjoying a consensus among authors so that it could be applied to all patients with acute Achilles tendon injuries.
2. Competition athletes should be preferably treated with surgical tendon repair and early ankle mobilization.
3. Conservative treatment is preferable in sedentary or old patients, carrying diseases enhancing surgical risks.
4. Surgical treatment, followed by early mobilization of the ankle has presented good outcomes regarding functional recovery of the tendon.
5. Immobilization must be sural-podalic, not requiring knee immobilization, both for surgical and conservative treatment of such injuries.
6. The medial access port is preferable in surgical treatment due to a lower potential of sural nerve injury.

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