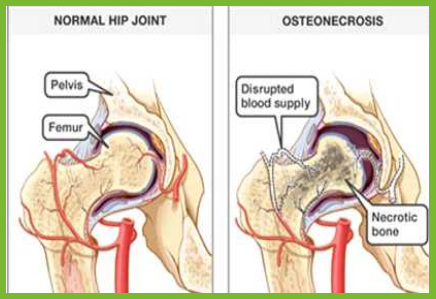
RESOLUTION OF AVASCULAR NECROSIS WITH INNOVATIVE MEDICAL TREATMENT AVOID HIP REPLACEMENT, DECOMPRESSION, DRILLING

DR. SANJAY AGARWALA

Director Professional Services
D.ORTH, M.S. ORTH(BOM), MCH. ORTH (ENGLAND)
Consultant, Joint Replacement & Orthopaedic Reconstructive Surgery at
P. D. Hinduja Hospital & Breach Candy Hospital, Mumbai.
Clinic at :104B, Sukh Sagar, Opera House, Mumbai - 400 007

Avascular Necrosis (AVN)



What Happens?

Diminished blood supply to your bones can result in structural failure of the bone, which can lead to collapse and dysfunction of the hip. In medical science this condition is called Osteonecrosis or Avascular Necrosis (AVN). Common sites affected are hip, shoulder, wrist & ankle joint.

Hard Bone
Normal bone is hard as wood.

Soft Bone due to AVN
Bone becomes as soft as a boiled potato

Normal femur head

Collapse of femur head in AVN

Head Collapse
Collapse of the femoral head was observed in 75 % of UNTREATED cases of Avascular Necrosis of the Femoral Head

- Literature suggests that more than 50% of patients with Avascular Necrosis of the femoral head require THR (Total Hip Replacement) within three years of diagnosis. In fact, AVN is the commonest cause of THR in young adults.
- **Good news!**
  Several of these patients who are on Dr. Agarwala's medical line of treatment MAY NOT require surgery.

Some Truths

- Many patients come for consultation after being advised surgical treatment elsewhere, including stem cell treatment, platelet injections, surgical decompression/forage technique (drilling of the femoral head) and, of course, even hip replacement.

- In majority of these cases, surgical intervention was avoided. **Relief from pain was seen within 3-6 weeks and were freely ambulant**.

- This research on bisphosphonate therapy in the management of AVN has paved the way for an economically viable medical mode of treatment of this painful condition. The treatment can postpone / avoid the need for expensive Hip Replacement Surgery

- **Patients who do not respond adequately and have persistent complaints are offered surgery, that is Total Hip Replacement.**

- Those patients suffering from advanced disease with collapse of the femoral head and arthritis of the joints needed THR (Total Hip Replacement) as the cure.

- **HIP REPLACEMENT PATIENTS ARE GENERALLY PERMITTED A FULL RANGE OF MOVEMENT AFTER HIP REPLACEMENT BY DR. SANJAY AGARWALA'S TECHNIQUE.**


JOURNAL ARTICLE

Efficacy of alendronate, a bi
the treatment of AVN of the
open-label study Get access

S. Agarwala , D. Jain , V. R. Joshi , A. Sule

Rheumatology, Volume 44, Issue 3, March 2005,
https://doi.org/10.1093/rheumatology/keh481
Published: 24 November 2004 Article histo

Cite Permissions Share

Abstract

Objective. To study the efficacy of alendronat
avascular necrosis (AVN) of the hip.

Methods. Sixty patients with AVN of the hip (
studied. The follow-up period ranged from 3
common cause of AVN was steroids. Paramet


Bisphosphonates for Post-COVID Osteone
Femoral Head

Medical Management of a Surgical Condition

Agarwala, Sanjay MCh(Ortho)[1], Vijayvargiya, Mayank MS(Ortho), Sawant, Ta
Kulkarni, Siddhesh MS(Ortho)

Author information

JBJS Open Access 7(4):e22.00068, October-December 2022. | DOI: 10.2106/JBJS.OA.22.0

OPEN DISCLOSURES

Abstract

Background:

COVID-19 infection can cause long-term effects, cumulatively known as lo
such sequela is osteonecrosis of the femoral head (also called avascular
head, or AVNFH). On the basis of our 20-year experience in using bisphos
successful management of osteonecrosis, we conducted the present stud
of the therapy in the management of post-COVID osteonecrosis of the fem
we aimed to evaluate the cumulative dosage of corticosteroids and the de
commencement of corticosteroids and the development of osteonecrosis

Internationally Published Facts

- This is the result of over two decades of dedicated research and practice in medical management of AVN by Dr. Sanjay Agarwala. This expertise offers hope for patients with AVN of the hip.

- Dr. Sanjay Agarwala has proposed using bisphosphonates as a repurposed treatment for AVN, since his first publication in the year 2001.

- This approach has proved highly effective in managing this painful & debilitating condition for **over 25 years** and has been published in **15 international peer-reviewed journals.**

- This treatment needs to be **continued for at least three years** in view of the three-year natural course history of AVN and the established three-year safety profile of bisphosphonate use.

- **The published studies done by Dr. Sanjay Agarwala have shown 98% success rate in Stage I, 92% success rate in stage II and 70% success rate in stage III, which is far better than the various studies done in the past which have a success rate of only around 30%.**

Treatment plan

MANAGING AVN WITH BISPHOSPHONATES A COMPREHENSIVE GUIDE

ALENDRONATE tablet **35mg** to be taken **twice weekly** (e.g. Monday & Thursday).

It is recommended that this tablet is taken in the morning, **even before** brushing your teeth, **on an empty stomach**, with two glasses of water (tea, coffee or juice WILL NOT do).

Do not eat or drink for up to half an hour after taking the tablet as it will change the acidity of the stomach and prevent the activity and absorption of the tablet.

At the end of 30 minutes, the medicine will have been absorbed and normal activities may be resumed.

Alendronate is now available as 35mg and 70mg preparation. **35 mg twice a week works better** than 70mg weekly in AVN cases.

To ensure immediate and sustained blood levels of bisphosphonates for enhanced efficacy, a primary **infusion** of **5mg Zoledronic Acid** injection is also administered intravenously **over 45-60 minutes** to supplement the availability of the drug in the blood at the start of the therapy.

After receiving the slow infusion of Zoledronic, patients may experience fever, flu-like symptoms, bone pain, and body aches for a day or two. These reactions are minimized by

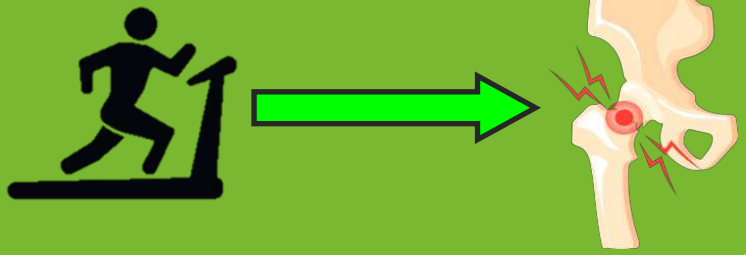
1. **Slow infusion**
2. A dose of two tablets of 10 mg **Wysolone** (Prednisolone) taken immediately prior to the infusion & 2 more tablets taken 30 mins after the infusion.
3. Symptoms can also be managed with **Paracetamol** (Crocin 500mg tablets or Combiflam) taken 2-3 times a day for 2 to 3 days.

An additional **BOOSTER infusion of Zoledronic acid** may be advised, to enhance the level of medicine in blood, if the patient does not respond adequately to the standard protocol of bisphosphonate therapy within six weeks.

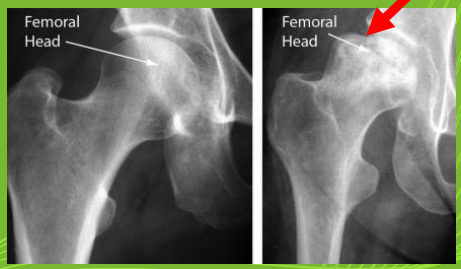
This helps to potentiate the effects of this medicine.

While on treatment we advise **that high impact exercise/physiotherapy be avoided.** These can cause collapse of the soft bone, which would then need surgical intervention like Total Hip Replacement (THR).

Once pain settles **Swimming, Walking in a swimming pool, Yoga and stationary Cycling** could be safe forms of exercise.



Collapse of softened bone due to impact



AFTER HIGH IMPACT EXERCISE

SOFT BONE COLLAPSES WITH EXERCISES.
HENCE, AVOID HIGH IMPACT EXERCISES.

BISPHOSPHONATE TREATMENT CONVERTS YOUR SOFT BONE INTO A HARD BONE.

FAQ's of Bisphosphonate Therapy :

Q Is this therapy safe?

Yes, our research, as published in the Journal of Global Oncology (see references), supports this treatment approach. In 20 years of experience, no major side effects have been faced. **A**

Q What about exercise, physiotherapy and use of walking aids?

While on treatment we advise patients to avoid high impact exercise or rigorous physiotherapy, which can cause collapse of the soft bone. Use walking aids like crutch supports in both arms or a walking stick on the side opposite to the painful side to reduce pressure on the hip. **A**

Q Do I need to take any specific supplements?

It's crucial to take calcium with vitamin D supplements alongside the treatment for the entire three-year duration, as bisphosphonates do not work in absence of vitamin D and calcium **A**

Q Can I swim, do yoga and use stationary cycle?

While on treatment we advise that high impact exercise /physiotherapy be avoided. This can cause collapse of the soft bone. Once pain settles **Swimming, Walking in a swimming pool, Yoga and stationary Cycling** could be safe forms of exercise, which will not negatively impact the soft bone **A**

FAQ's of Bisphosphonate Therapy :

Q When to book follow-up appointments?

A Your appointment will be scheduled after 6 to 8 weeks in the outpatient department from the start of treatment, this may be arranged, earlier or later as necessary.

Q Will I need any additional tests or investigations on follow up?

A Prior to the follow-up appointment, please arrange to have FRESH/NEW X-Rays of your **pelvis with both hips – AP and Frog leg lateral views.**

Q What can I expect during follow-up appointments?

A After reviewing the new investigations
A) if the patient is responding well with more than 70% pain relief, oral bisphosphonate therapy will be continued.
B) If not responding adequately, a supplementary early extra booster dose of Zoledronic acid may be recommended

Q When do you advise for surgery?

A We advise surgery for patients who do not respond to bisphosphonate therapy and whose lifestyle, daily activities & quality of life are significantly restricted or hindered by pain.

Post Treatment results after 3 years : Case 1

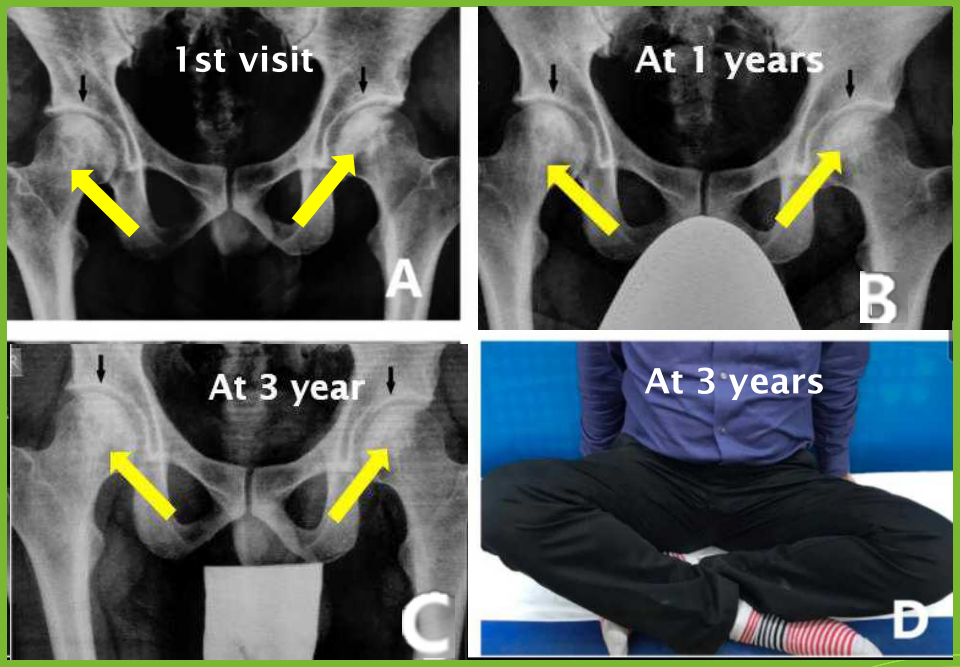
A: X-ray at the first visit showing signs of osteonecrosis **(AVN)** in the femoral head.

B: X-ray **at 6 months** post-treatment demonstrating **PARTIAL CONSOLIDATION** of the affected bone.

C: X-ray **at 3 years** showing **COMPLETE STRUCTURAL CONSOLIDATION** of the femoral head

D: Patient at the end of 3 years of treatment, exhibiting a **FULL RANGE OF MOTION AND NO FUNCTIONAL LIMITATIONS.**

Post Treatment results after 3 years : Case 2



A:X-ray at the first visit showing signs of osteonecrosis **(AVN)** in both the femoral heads.

B:X-ray at **6 months** post-treatment demonstrating **PARTIAL CONSOLIDATION** of the affected bones.

C:X-ray **at 3 years** showing **COMPLETE STRUCTURAL CONSOLIDATION** of the femoral head.

D:Patient at the end of 3 years of treatment, exhibiting a **FULL RANGE OF MOTION AND NO FUNCTIONAL LIMITATIONS.**

International Publications and Awards

JB&JS OPEN ACCESS

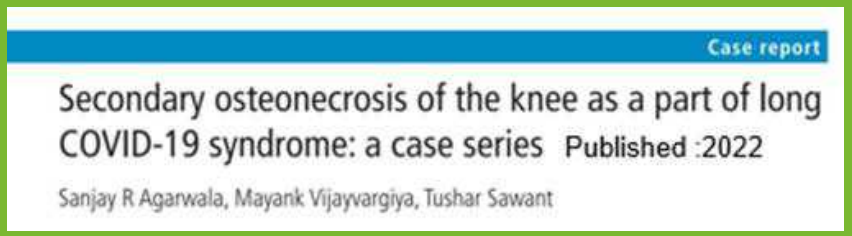
Published :OCT 2021

A Paradigm Shift in Osteonecrosis Treatment with Bisphosphonates

A 20-Year Study

Sanjay Agarwala D(Orth), MS(Orth), MCh(Orth), and Mayank Vijayvargiya, MS(Orth)

Investigation performed at the Department of Orthopaedics, P.D. Hinduja National Hospital and Medical Research Centre, Mumbai, India



Case report

Secondary osteonecrosis of the knee as a part of long COVID-19 syndrome: a case series Published :2022

Sanjay R Agarwala, Mayank Vijayvargiya, Tushar Sawant

JB&JS OPEN ACCESS

Published : OCT 2022

Bisphosphonates for Post-COVID Osteonecrosis of the Femoral Head

Medical Management of a Surgical Condition

Sanjay Agarwala, MCh(Ortho), Mayank Vijayvargiya, MS(Ortho), Tushar Sawant, DNB(Ortho), and Siddhesh Kulkarni, MS(Ortho)

Investigation performed at the Department of Orthopedics, P.D. Hinduja Hospital and Medical Research Centre, Mumbai, India

British Society for Rheumatology

JOURNAL ARTICLE

Efficacy of alendronate, a bisphosphonate, in the treatment of AVN of the hip. A prospective open-label study

S. Agarwala ✉ , D. Jain , V. R. Joshi , A. Sule

Rheumatology, Volume 44, Issue 3, March 2005, Pages 352–359,
https://doi.org/10.1093/rheumatology/keh481

JOA

Published :AUG 2009

original report

Bisphosphonate Combination Therapy in the Management of Postchemotherapy Avascular Necrosis of the Femoral Head in Adolescents and Young Adults: A Retrospective Study From India

JCO® Global Oncology
An American Society of Clinical Oncology Journal

Original Article

Ann Rehabil Med 2019;43(3):314-320
pISSN: 2234-0645 • eISSN: 2234-0653
https://doi.org/10.5535/arm.2019.43.3.314

arm
Annals of Rehabilitation Medicine

Single Dose Therapy of Zoledronic Acid for the Treatment of Transient Osteoporosis of Hip

Sanjay Agarwala, MD, Mayank Vijayvargiya, MD

Department of Orthopedics, P.D. Hinduja National Hospital and Medical Research Centre, Mumbai, India

Case report

BMJ case report

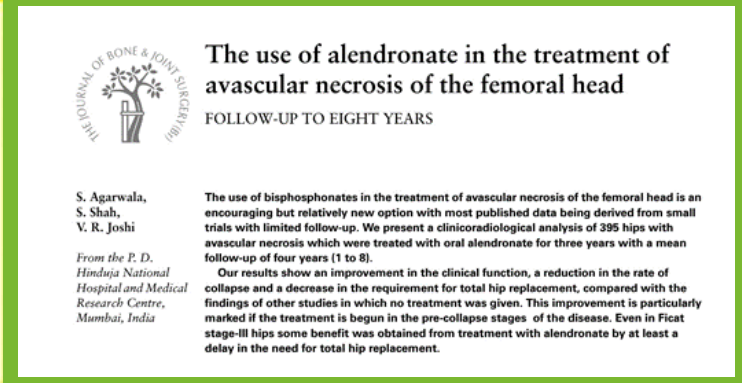
Avascular necrosis as a part of 'long COVID-19'

Sanjay R Agarwala,[1] Mayank Vijayvargiya,[2] Prashant Pandey[2]

The Editorial Board of
The Journal of the Association of Physicians of India
is pleased to present
The Dr. J. C. Patel - Dr. B. C. Mehta
Best Correspondence Award for the year 2001
to
Dr. S. Agarwala, *Mumbai*
For the Correspondence "**Study of Alendronate in Avascular Necrosis of Bone**"
S. Agarwala, A. Sule, B.U. Pai, V.R. Joshi

J
A
P
I

Dr. S. K. Bichile
Hon. Editor, JAPI.



The use of alendronate in the treatment of avascular necrosis of the femoral head

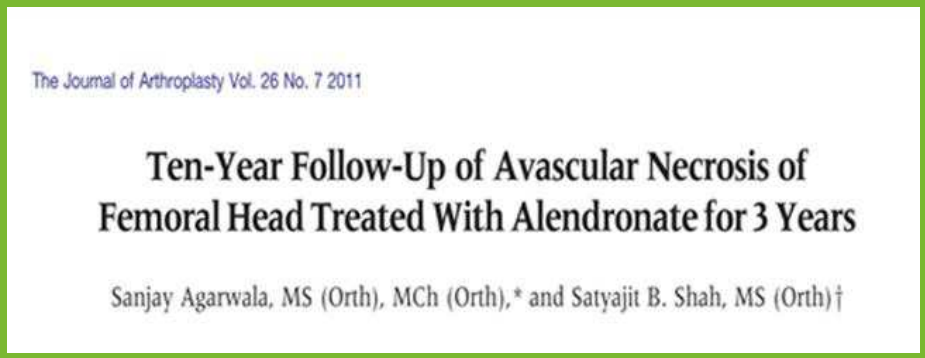
FOLLOW-UP TO EIGHT YEARS

S. Agarwala,
S. Shah,
V. R. Joshi

From the P. D. Hinduja National Hospital and Medical Research Centre, Mumbai, India

The use of bisphosphonates in the treatment of avascular necrosis of the femoral head is an encouraging but relatively new option with most published data being derived from small trials with limited follow-up. We present a clinicoradiological analysis of 395 hips with avascular necrosis which were treated with oral alendronate for three years with a mean follow-up of four years (1 to 8).

Our results show an improvement in the clinical function, a reduction in the rate of collapse and a decrease in the requirement for total hip replacement, compared with the findings of other studies in which no treatment was given. This improvement is particularly marked if the treatment is begun in the pre-collapse stages of the disease. Even in Ficat stage-III hips some benefit was obtained from treatment with alendronate by at least a delay in the need for total hip replacement.



The Journal of Arthroplasty Vol. 26 No. 7 2011

Ten-Year Follow-Up of Avascular Necrosis of Femoral Head Treated With Alendronate for 3 Years

Sanjay Agarwala, MS (Orth), MCh (Orth),* and Satyajit B. Shah, MS (Orth)†

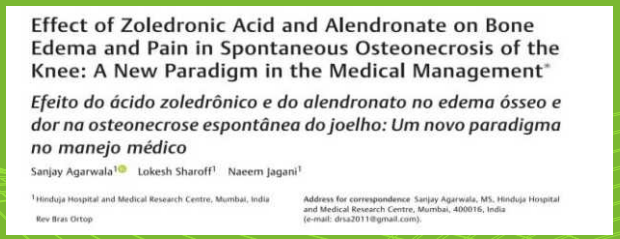
Agarwala and Vijayvargiya Journal of Orthopaedic Surgery and Research
(2019) 14:112
https://doi.org/10.1186/s13018-019-1152-7

Journal of Orthopaedic Surgery and Research

RESEARCH ARTICLE Open Access

Bisphosphonate combination therapy for non-femoral avascular necrosis

Sanjay Agarwala* and Mayank Vijayvargiya



Effect of Zoledronic Acid and Alendronate on Bone Edema and Pain in Spontaneous Osteonecrosis of the Knee: A New Paradigm in the Medical Management*

Efeito do ácido zoledrônico e do alendronato no edema ósseo e dor na osteonecrose espontânea do joelho: Um novo paradigma no manejo médico

Sanjay Agarwala[1] Lokesh Sharoff[1] Naeem Jagani[1]

[1] Hinduja Hospital and Medical Research Centre, Mumbai, India

Address for correspondence Sanjay Agarwala, MS, Hinduja Hospital and Medical Research Centre, Mumbai, 400016, India (e-mail: drsa2011@gmail.com).

Rev Bras Ortop


Published : 2019

Surgical Attachments :
P. D. Hinduja National Hospital
Veer Savarkar Marg, Mahim, Mumbai - 400 016.
Call Centre No. for Appointments : +91 (22) 4510 8181 or +91 (22) 6766 8181
Secretary : +91 22 69248185
Assistance for Appointments : +91 22 6924 8173
Emergency No. +98694 46644 (Whatsapp Only)

Breach Candy Hospital
Bhulabhai Desai Road, Mumbai - 400 026

Dr. Sanjay Agarwala
Head - Orthopedics & Traumatology
Director-Professional Services
P.D. Hinduja Hospital & Med.Res.Centre
Veer Savarkar Marg,Mahim(West),
Mumbai 400 016.

Agarwala Clinic:

104-B, Sukh Sagar Building, 1st floor, Abv. Kobe Sizzlers,
N. S. Patkar Marg, (Hughes Road),
Opera House, Mumbai - 400 007.
Contact No. +91 22 35542626 / +91 9869480707

August 2025