Avulsed Tooth - A guide to management

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Abstract - Avulsion of teeth is one of the most commonly occurring fractures of tooth among children. Avulsion means complete displacement of the tooth from its socket. The treatment generally involves reimplantation but the prognosis depends upon the extraoral time and the storage media. This article talks about the Dental Avulsion, etiology, pathophysiology and treatment options along with storage media.

Index Terms - Dental avulsion, Avulsion of teeth.

I. INTRODUCTION
Dento-alveolar trauma involves injuries which are caused by an external trauma on the teeth and its surrounding structures.
These injuries can range from simple contusion of the tooth to total dislocation from the alveolar bone, termed tooth avulsion, which is a rare type of dental trauma.
Avulsion of tooth is considered as one of the serious traumatic dental injuries as loss of tooth not only compromises the functional aspect but also the physiological aspect of the patient.
Presence of the tooth outside the socket can degenerate the pulp and periodontal ligaments (PDLs) because of absence of blood and nerve supply to the cells in addition to the unfavorable environment and possible contamination.
Replantation is the treatment of choice, and time management and appropriate storage of the avulsed tooth are crucial factors that will guarantee a good prognosis.
Anti-resorption therapy is a newer technique that prevents the common inflammation that avulsed teeth experience after replantation, using a combination of antibiotics and corticosteroids.
Splinting and systemic antibiotics are also included in the treatment regime of a patient with an avulsed tooth.

II. ETIOLOGY
The etiology of avulsion of tooth is different for different dentition. It varies according to the type of dentition of the patient. In primary dentition it is typically caused by hard objects hitting the teeth, whereas in case of permanent dentition it is generally caused by falls, fights, sport injuries, automobile accidents, and child abuse.
Other causes include:
- Cycling
- Full-contact sports
- Traffic accidents
- Assault.
- Dental trauma most frequently occurs at home, school, and sports centers.
- Protruberant upper teeth, overjet (over 3 mm), anterior open bite, malocclusion (Class II), incompetent lips, and mouth breathing.

III. PREVALENCE
Most cases of dental trauma occurs in the 7-11-year age group, with a male to female ratio of 2:1
The prevalence of Dental Injuries in Indian population was 13 cases in 100 individuals based on a meta-analysis conducted in India. The prevalence of Traumatic Dental Injuries for age groups of less than or equal to 6 was 15% (males, 15%; females, 16%) and for more than 6 years was 12% (males, 13%; females, 8%).
The most common cause of Traumatic Dental Injuries recorded was caused by falls with most frequently occurring in the Home.

IV. PATHOPHYSIOLOGY
A tooth avulsion is when a tooth is completely displaced from its socket in the alveolar bone. This can happen due to a fall, a sports injury, or other trauma. When a tooth is avulsed, it can cause attachment damage and pulp necrosis. Attachment damage is damage to the periodontal ligament, which is the tissue that attaches the tooth to the bone. Pulp necrosis is the death of the pulp, which is the soft tissue inside the tooth that contains nerves and blood vessels.
If the periodontal ligament left attached to the root surface does not dry out, the consequences of tooth avulsion are usually minimal. This is because the hydrated periodontal ligament cells will maintain their viability, allowing healing with regenerated periodontal ligament cells when replanted without causing much destructive inflammation.

However, if excessive drying occurs before replantation, the damaged periodontal ligament cells will elicit an inflammatory response over a diffuse area on the root surface. This can lead to more extensive damage to the tooth and make it more difficult to save.\[5\]

V. MANAGEMENT

HISTORY AND EVALUATION

The most important step before the treatment is taking a proper history and clinical evaluation. The history involves asking about the patient's age, cause of injury, location of injury, nature of the pain and the symptoms faced by the child. Age- Age of the child will determine the type of tooth. Reimplantation is indicated only for permanent tooth. Whereas for primary tooth it is contraindicated because of a chance of injury to the developing succedaneous tooth bud. Cause of injury- Cause of injury will help to find the type of fracture to the tooth. Helping in proper diagnosis of the fracture and planning for a comprehensive and necessary treatment. It also helps to track the path of trauma finding other structures impacted with the trauma. This helps to identify adjacent structures as well and giving a treatment for them. Nature of pain- Nature of pain can help in finding the structures involved. There lie two principal fibers – a delta fibers and c fibers responsible for pain. A delta generally lies more superficial, whereas C fibers lies at deeper regions resulting in different types of pain. Localization and Generalization of pain also helps to identify the areas of injury. Location of injury- Location of injury helps in determining chances of infection. Generally outside areas like school grounds can harbor number of bacteria which can cause infections. One of the most important question to be asked is the duration between the injury and the specialist visit and the extraoral time of the avulsed tooth. This factor is most important as it will determine the chances of revascularization and reimplantation. Replantation is the treatment of choice, although not always possible. The appropriate management of an avulsed tooth within the first 30 minutes and an organized treatment plan are essential to increase the rate of survival of tooth. The first aim of the treatment is to preserve tooth vitality or maintain a functional tooth in its alveolar socket.

PRE-IMPLANTATION PROCEDURES

1. Storage Media
2. Anti-resorption Therapy
3. Tooth Replantation

STORAGE MEDIUM\[6\]
The ideal storage medium should be capable of preserving the feasibility of cellular periodontal ligament, so that the cells could go through mitosis and form clones of the damaged fibroblasts of the periodontal ligament and its generating cells.

TAP WATER

Tap water is not recommended for storing avulsed teeth because it is not compatible with the periodontal ligament (PDL) cells. The PDL cells are responsible for attaching the tooth to the bone, and they need to be kept alive in order for the tooth to be replanted successfully. Tap water is hypotonic, which means that it has a lower concentration of solutes than the cells in the PDL. This causes the cells to swell and eventually burst, which can lead to cell death. Tap water can also cause replacement resorption, which is a condition where the body replaces the lost tooth with bone. For these reasons, tap water is considered the least desirable storage medium for avulsed teeth. The best storage medium is milk, as it is isotonic to the PDL cells and has been shown to help preserve their viability.\[7\]

NORMAL SALINE

Isotonic saline is a common storage medium for avulsed teeth because it has a similar osmolality to the cells in the periodontal ligament (PDL). However, it is not ideal because it does not contain any nutrients, which are essential for the cells to survive.
A study by Andreasen et al. (1987) found that isotonic saline was able to maintain the viability of PDL cells for up to 4 hours, but after that, the cell death rate increased. Another study by Pileggi et al. (1992) found that isotonic saline was not able to maintain the metabolism of PDL cells, which is essential for their survival. Despite its limitations, isotonic saline is still considered an acceptable storage medium for avulsed teeth. This is because it is better than storing the tooth dry, which can cause the cells to die more quickly. A study by Andreasen et al. (1990) found that there was no significant difference in the development of ankylosis between teeth stored in dry conditions and teeth stored in isotonic saline. Ankylosis is a condition where the tooth fuses to the bone, which can make it difficult to replant the tooth. It is generally recommended to store avulsed teeth in isotonic saline for no more than 10 minutes. After that, the tooth should be replanted or placed in a more suitable storage medium, such as milk or Hank's balanced salt solution. 

SALIVA

Saliva is a readily available, natural storage medium for avulsed teeth. However, it is not ideal because it contains enzymes and bacteria that can damage the periodontal ligament (PDL) cells. It also has a non-physiologic osmolality, which means that it is not the same as the fluid that surrounds the cells in the body. Studies have shown that storing avulsed teeth in saliva for more than 30 minutes can significantly decrease the functional capacity of the PDL cells. This means that the cells are less likely to survive and the tooth is less likely to be replanted successfully. For these reasons, saliva is not recommended as a long-term storage medium for avulsed teeth. It can be used as an interim storage medium for up to 30 minutes, but the tooth should be replanted or placed in a more suitable storage medium as soon as possible. 

MILK

Milk is a popular storage medium for avulsed teeth because it is readily available, inexpensive, and has a similar osmolality to the fluid that surrounds the cells in the body. Studies have shown that milk can maintain the viability of periodontal ligament (PDL) cells for up to 6 hours. Benefits of using milk as a storage medium for avulsed teeth:

• It is readily available and inexpensive.
• It has a similar osmolality to the fluid that surrounds the cells in the body.
• It contains nutrients that are essential for the survival of PDL cells.
• It is slightly alkaline, which helps to protect the cells from damage.

Drawbacks of using milk as a storage medium for avulsed teeth:

• It can contain bacteria, so it is important to use fresh, refrigerated milk.
• Sour milk should not be used, as it can be harmful to the cells.
• Milk does not have a proven role in assisting cell mitosis in PDL cells.

Overall, milk is a good option for storing avulsed teeth. However, it is important to use fresh, refrigerated milk and to avoid using sour milk.

GATORADE

Gatorade is a brand of sports-themed food and beverage products manufactured by PepsiCo and distributed in over 80 countries. It consists of a mixture of water, sodium, sugar, potassium, phosphate, and lemon juice. It has a higher osmolarity than the fluid that surrounds the cells in the body, which can cause cell lysis (cell death). A study by Harkacz et al. (1997) found that storing avulsed teeth in Gatorade resulted in better cell survival than storing them in tap water. However, the study also found that the osmolarity of Gatorade caused some cell lysis, and hence it is not recommended for long-term storage of avulsed teeth. For short-term storage, Gatorade may be a better option than tap water. However, it is important to note that Gatorade does not contain all of the nutrients that are essential for the survival of PDL cells.

COCONUT WATER

Coconut water is a biological liquid that is pure, sterile, and rich in nutrients. It is an isotonic solution, which means that it has the same osmolality as the fluid that surrounds the cells in the body. Coconut water is readily available in tropical countries, and it can be obtained fresh directly from coconuts or commercially in packages and bottles. A study by Gopikrishna et al. (2013) found that coconut water was the most effective in maintaining the viability of periodontal ligament (PDL) cells when compared with other media like HBSS, propolis, and milk. The study also found
that the combination of coconut water with sodium bicarbonate was more effective than coconut water alone. However, other studies have shown contradicting results. The pH of coconut water is 4.1, which is acidic. This acidity can have harmful effects on cell metabolism until it is neutralized. Therefore, further research is needed before coconut water can be used effectively as a storage medium for avulsed teeth.

Benefits of using coconut water as a storage medium for avulsed teeth:
- It is readily available and inexpensive.
- It is an isotonic solution, which means that it does not cause cell lysis.
- It contains nutrients that are essential for the survival of PDL cells.
- It has anti-inflammatory and antioxidant properties, which can help to protect the cells from damage.

Drawbacks of using coconut water as a storage medium for avulsed teeth:
- The pH of coconut water is acidic, which can have harmful effects on cell metabolism.
- Coconut water can contain bacteria, so it is important to use fresh, refrigerated coconut water.
- Coconut water does not have a proven role in assisting cell mitosis in PDL cells.

Overall, coconut water is a promising storage medium for avulsed teeth. However, further research is needed to confirm its effectiveness and safety. [7]

HBSS
Hank's balanced salt solution (HBSS) is a laboratory solution that is designed to mimic the fluid that surrounds the cells in the body. It is pH balanced and contains essential metabolites that are needed for the viability of periodontal ligament (PDL) cells.

HBSS is considered the gold standard for storage media used in the transport of avulsed teeth. This is because it has been shown to maintain the vitality, clonogenic, and mitogenic capacity of PDL cells for up to 48 hours. This means that HBSS can help to keep the cells alive and healthy for a long period of time.

HBSS is not readily available to the public. It is typically used in research laboratories, but it is sometimes available in emergency kits. These kits typically include a small basket that can be used to hold the avulsed tooth while it is submerged in HBSS.

The main drawbacks of HBSS are its lack of availability and its cost. It can be expensive to purchase HBSS, and it may not be available in all areas. Despite these drawbacks, HBSS is considered the best storage medium for avulsed teeth. If it is available, it is the best option for storing avulsed teeth. [7]

PROPOLIS
Propolis is a resinous material that is collected by bees from tree buds and sap flows. It is used by bees to build and maintain their hives, and it has a number of beneficial properties, including anti-inflammatory, antibacterial, antioxidant, antifungal, and tissue regenerative properties.

The main ingredient of propolis is flavonoids, which are plant compounds that have a number of health benefits. The chemical composition of propolis can vary depending on the type of tree from which it is collected and the time of year. Recent studies have shown that 10% propolis solution can be an effective storage medium for avulsed teeth. This is because propolis has a number of properties that are beneficial for the periodontal ligament (PDL) cells, which are the cells that attach the tooth to the bone. Propolis can help to protect the PDL cells from damage, and it can also help to promote the healing of the tissues around the tooth.

However, propolis is not readily available, which limits its usefulness as a storage medium for avulsed teeth. Other more readily available storage media, such as milk and HBSS, are also effective in maintaining the viability of PDL cells.

Benefits of using propolis as a storage medium for avulsed teeth:
- It has anti-inflammatory, antibacterial, antioxidant, and antifungal properties.
- It can help to protect the PDL cells from damage.
- It can help to promote the healing of the tissues around the tooth.

Drawbacks of using propolis as a storage medium for avulsed teeth:
- It is not readily available.
- The chemical composition can vary.
- It is not as well-studied as other storage media, such as milk and HBSS. [7]
L-DOPA
Levodopa stimulates dopaminergic systems in the anterior portion of the pituitary gland to secrete growth hormone, which is considered a promoter of the healing process. Levodopa can also have a local effect on the growth of cells, including the PDL cells and can act as a preserving medium for avulsed teeth.

EGG-WHITE
Egg white has been studied as a storage medium for avulsed teeth. It has been found to be as effective as HBSS in maintaining the viability of periodontal ligament (PDL) cells, and it may even be better than milk in promoting PDL healing.

One study found that egg white could be used to store avulsed teeth for up to 10 hours without affecting the viability of the PDL cells. Another study found that there was no difference between milk, egg white, and artificial saliva in terms of their ability to maintain the viability of PDL cells.

However, egg white is not a practical storage medium for avulsed teeth. It is difficult to keep the egg white sterile, and it can be difficult to transport the tooth in egg white without contaminating it.

Benefits of using egg white as a storage medium for avulsed teeth:
- It is readily available.
- It is inexpensive.
- It has been shown to be effective in maintaining the viability of PDL cells.
- It may be better than milk in promoting PDL healing.

Drawbacks of using egg white as a storage medium for avulsed teeth:
- It is difficult to keep sterile.
- It is difficult to transport without contaminating.
- It is not as well-studied as other storage media, such as milk and HBSS. [7]

SPLINTING
Avulsed teeth should always be stabilized to keep them in place, make the patient comfortable, and improve their function.

Current evidence suggests that short-term, passive, and flexible splints are the best way to stabilize avulsed teeth. Studies have shown that periodontal and pulp healing are improved when the replanted tooth is allowed to move slightly. This can be achieved by using a stainless-steel wire up to 0.016 inches in diameter or nylon fishing line (0.13-0.25 mm) bonded to the teeth with composite resin.

Replanted permanent teeth should be stabilized for 2 weeks, depending on the length and maturity of the root. An animal study has shown that more than 60% of the mechanical properties of the injured periodontal ligament (PDL) return within 2 weeks of injury. However, the likelihood of successful periodontal healing after replantation is not likely to be affected by the duration of splinting.

The wire (or nylon line) and composite stabilization should be placed on the labial surfaces to avoid interference with occlusion and to allow access to the palatal/lingual surfaces for endodontic procedures. Various types of wire (or nylon line) and acid-etch bonded stabilization have been used to stabilize avulsed teeth. These methods allow for good oral hygiene and are well-tolerated by patients.

It is important to keep the composite and bonding agents away from the marginal gingiva and interproximal areas to prevent plaque buildup and secondary infection. This will also make it easier for the patient to clean the area. The patient and parent should be advised that the injured tooth may be mobile after the splint is removed. An additional week of splinting may be necessary if the tooth is still mobile or if it is unable to stay in the correct position. This should be assessed after the splint is removed and the occlusion is checked. [8]

MANAGEMENT OF AVULSION IN THE DENTAL OFFICE DEPENDING UPON THE EXTRAORAL TIME
For management of avulsed tooth, the clinician must consider certain points - the first thing is to assess the condition of PDL cells.

- When the PDL cells are most likely viable. The tooth has been replanted immediately or within a very short time (about 15 minutes) at the place of accident.
- When the PDL cells may be viable but compromised. The tooth has been kept in a storage medium (eg, milk, HBSS (Save-a-Tooth or similar product), saliva, or saline, and the total extra-oral dry time has been <60 minutes).
When the PDL cells are likely to be non-viable. The total extra-oral dry time has been more than 60 minutes, regardless of the tooth having been stored in a medium or not.\(^{[9]}\)

The next step is determining the condition of apex. The treatment modality is different for open apex and closed apex with a different prognosis.

**TREATMENT GUIDELINES FOR CLOSED APEX:**

If the tooth has been replanted at the site of injury or before the patient’s arrival at the dental clinic:

1. Injured area is cleaned with water, saline, or chlorhexidine.
2. Correct position is verified for the replanted tooth both clinically and radiographically.
3. Reimplanted tooth is left in socket.
4. Local anesthesia is administered, if necessary, and preferably with no vasoconstrictor.
5. Tooth is stabilized for 2 weeks using a passive flexible wire of a diameter up to 0.016” or 0.4 mm. Bonded to the tooth and adjacent teeth using composite resins.
6. Gingival lacerations are sutured, if present.
7. Root canal treatment is initiated within 2 weeks after replantation.
8. Systemic antibiotics are administered.
9. Tetanus is administered if required.
10. Post-operative instructions are provided to the patient.
11. Patient is recalled for follow up.\(^{[9]}\)

The tooth has been kept in a physiologic storage medium or stored in non-physiologic conditions, with the extra-oral dry time less than 60 minutes:

1. If case of visible contamination, root surface is rinsed with a stream of saline or osmolality-balanced media to remove gross debris.
2. The avulsed tooth is checked for surface debris and if found, removed by gently agitating it in the storage medium. Alternatively, saline can be used to rinse its surface.
3. While taking the history and examining the patient, the tooth is kept in storage medium.
4. Local anesthesia is administered, preferably without a vasoconstrictor.
5. Irrigation of the socket is done with sterile saline.
6. Removal of any coagulum with a stream of saline may aid in better repositioning of the tooth.
7. Tooth is slowly reimplanted with slight digital pressure. Excessive force is contraindicated.
8. Correct position of the replanted tooth is verified both clinically and radiographically.
9. Tooth is stabilized for 2 weeks using a passive, flexible wire of a diameter up to 0.016” or 0.4 mm. In cases of associated alveolar or jawbone fracture, a more rigid splint is indicated and should be left for about 4 weeks.
10. Gingival lacerations are sutured, if present.
11. Root canal treatment is initiated within 2 weeks after replantation.
12. Systemic antibiotics are administered.
13. Tetanus is administered if needed.
14. Post-operative instructions are provided.
15. Patient is recalled for follow up.\(^{[9]}\)

Extra-oral dry time longer than 60 minutes:

1. Any loose debris is removed by agitating the tooth in a physiologic storage medium, or with gauze soaked in saline.
2. Local anesthesia is administered, preferably without a vasoconstrictor.
3. Irrigation of the socket is done with with sterile saline.
4. Removal of any coagulum with a stream of saline may aid in better repositioning of the tooth.
5. Tooth is slowly reimplanted with slight digital pressure. Excessive force is contraindicated.
6. Correct position of the replanted tooth is verified both clinically and radiographically.
7. Tooth is stabilized for 2 weeks using a passive, flexible wire of a diameter up to 0.016” or 0.4 mm. In cases of associated alveolar or jawbone fracture, a more rigid splint is indicated and should be left for about 4 weeks.
8. Gingival lacerations are sutured, if present.
9. Root canal treatment is initiated within 2 weeks after replantation.
10. Systemic antibiotics are administered.
11. Tetanus is administered if needed.
12. Post-operative instructions are provided.
13. Patient is recalled for follow up [9]

Delayed reimplantation can cause poor long-term prognosis. The PDL cells becomes necrosed and cannot regenerate if kept dry for more than 60 minutes. However, reimplantation should always be attempted with the main goal being restoration of function and esthetics.

**TREATMENT GUIDELINES FOR OPEN APEX:**

**THE TOOTH HAS BEEN REPLANTED BEFORE THE PATIENT’S ARRIVAL AT THE CLINIC**

1. The area is cleaned with water, saline, or chlorhexidine.
2. Correct position of the replanted tooth is verified both clinically and radiographically.
3. Tooth is left in the jaw
4. Local anesthesia is administered, if necessary, and preferably with no vasoconstrictor.
5. Tooth is stabilized for 2 weeks using a passive, flexible wire of a diameter up to 0.016” or 0.4 mm. In cases of associated alveolar or jawbone fracture, a more rigid splint is indicated and should be left for about 4 weeks.
6. Gingival lacerations are sutured, if present.
7. Pulp revascularization is attempted
8. Systemic antibiotics are administered
9. Tetanus is administered if needed
10. Post-operative instructions are provided
11. Patient is recalled for follow up [9]

In immature teeth with open apex, there is a chance for spontaneous healing to occur in the form of new connective tissue with a vascular supply. This allows continued development of root and its maturation. Hence, endodontic treatment should not be initiated unless there is a definite sign of pulpal necrosis and infection of the root canal system at follow-up appointments.

**THE TOOTH HAS BEEN KEPT IN A PHYSIOLOGIC STORAGE MEDIUM OR STORED IN NON-PHYSIOLOGIC CONDITIONS, AND THE EXTRA-ORAL TIME HAS BEEN LESS THAN 60 MINUTES**

1. If case of visible contamination, root surface is rinsed with a stream of saline or osmolality-balanced media to remove gross debris.
2. The avulsed tooth is checked for surface debris and if found, removed by gently agitating it in the storage medium. Alternatively, saline can be used to rinse its surface.
3. While taking the history and examining the patient, the tooth is kept in storage medium.
4. Local anesthesia is administered, preferably without a vasoconstrictor.
5. Irrigation of the socket is done with sterile saline.
6. Removal of any coagulum with a stream of saline may aid in better repositioning of the tooth.
7. Tooth is slowly reimplanted with slight digital pressure. Excessive force is contraindicated.
8. Correct position of the replanted tooth is verified both clinically and radiographically.
9. Tooth is stabilized for 2 weeks using a passive, flexible wire of a diameter up to 0.016” or 0.4 mm. In cases of associated alveolar or jawbone fracture, a more rigid splint is indicated and should be left for about 4 weeks.
10. Gingival lacerations are sutured, if present.
11. Pulp revascularization is attempted If spontaneous revascularization does not occur, apexification, pulp revitalization/revascularization or root canal treatment should be initiated as soon as pulp necrosis and infection is identified.
12. Systemic antibiotics are administered
13. Tetanus is administered if needed
14. Post-operative instructions are provided
15. Patient is recalled for follow up [9]

**EXTRA-ORAL TIME LONGER THAN 60 MINUTES**

1. If case of visible contamination, root surface is rinsed with a stream of saline or osmolality-balanced media to remove gross debris.
2. The avulsed tooth is checked for surface debris and if found, removed by gently agitating it in the storage medium. Alternatively, saline can be used to rinse its surface.
3. While taking the history and examining the patient, the tooth is kept in storage medium.
4. Local anesthesia is administered, preferably without a vasoconstrictor.
5. Irrigation of the socket is done with sterile saline.
6. Removal of any coagulum with a stream of saline may aid in better repositioning of the tooth.
7. Tooth is slowly reimplanted with slight digital pressure. Excessive force is contraindicated.
8. Correct position of the replanted tooth is verified both clinically and radiographically.
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13. Tetanus is administered if needed
14. Post-operative instructions are provided
15. Patient is recalled for follow up

ANESTHETICS
Replanting an avulsed tooth as soon as possible is the best treatment. This is usually not painful, so local anesthesia is not needed at the scene of the accident. However, pain control is important once the patient arrives at a dental or medical facility.

There is some concern that using a vasoconstrictor in the local anesthetic solution may increase the risk of complications. However, there is little evidence to support this. In some cases, regional anesthesia, such as an infraorbital nerve block, may be considered as an alternative to infiltration anesthesia. However, this should only be done by a dentist or oral surgeon who is experienced in providing such injections.

SYSTEMIC ANTI-BIOTICS
The use of systemic antibiotics after avulsion and replantation of a tooth is controversial. Some experts believe that it is not necessary, while others believe that it can help to prevent infection and reduce the risk of inflammatory root resorption.

If systemic antibiotics are used, the most common choices are amoxicillin or penicillin. These antibiotics are effective against the bacteria that are commonly found in the oral cavity. Other antibiotics, such as doxycycline, may be considered for patients who are allergic to penicillin.

The dosage of the antibiotic should be calculated based on the patient's age and weight. It is important to take the antibiotic as prescribed, even if the patient feels better.

The risk of discoloration of permanent teeth must be considered before using a tetracycline antibiotic in young patients. Tetracycline or doxycycline are generally not recommended for patients under 12 years of age.

TOPICAL FLUORIDES
The use of topical antibiotics on the root surface of an avulsed tooth before replantation is a controversial topic. Animal studies have shown that topical antibiotics can help to promote pulp revascularization, but human studies have not been able to replicate these results. Therefore, it is not clear whether topical antibiotics are effective in humans.

There are a few reasons why human studies may not have been able to demonstrate the same benefits of topical antibiotics as animal studies. One possibility is that the antibiotics used in human studies were not effective against the bacteria that were present on the root surface of the avulsed teeth. Another possibility is that the antibiotics were not applied for a long enough period of time. Finally, it is also possible that the methods used to apply the antibiotics were not effective.

TETANUS
Although it is common for people to receive tetanus immunization and boosters, it is not always the case. Therefore, it is important to refer the patient to a physician for evaluation of the need for a tetanus booster.

Tetanus is a serious infection caused by a bacteria called Clostridium tetani. The bacteria can enter the body through a break in the skin, such as a puncture wound or a cut. Tetanus can cause muscle stiffness, spasms, and difficulty breathing. In severe cases, tetanus can be fatal.

CONCLUSION
Dental Avulsion though a common phenomenon in children is something that requires prime attention of a clinician. Timely storage of the tooth in a suitable storage media greatly changes its prognosis. The treatment options are broadly of two types- Revascularization and Re-implantation. These treatment modalities are decided based on the history of the child and specifically the extraoral time of the tooth. This article briefly talks about the dental avulsion and the suitable
management along with storage media. This will allow clinicians to make a decision when choosing a suitable separating media and planning proper treatment.

REFERENCES: